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DEPARTMENT OF ENERGY'S CIVILIAN NUCLEAR WASTE PROGRAM

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED SECOND CONGRESS

FIRST SESSION

ON THE

DEPARTMENT OF ENERGY'S CIVILIAN NUCLEAR WASTE PROGRAM

MARCH 21, 1991

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DEPARTMENT OF ENERGY'S CIVILIAN NUCLEAR WASTE PROGRAM

THURSDAY, MARCH 21, 1991

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 9:38 a.m. in room SD-366, Dirksen Senate Office Building, Hon. J. Bennett Johnston, chairman, presiding.

OPENING STATEMENT OF HON. J. BENNETT JOHNSTON, U.S. SENATOR FROM LOUISIANA

The CHAIRMAN. The hearing will come to order. Good morning and welcome to the committee's hearing today on the Department of Energy's Nuclear Waste Program. This is a vitally important program, not only to the Department of Energy and to this committee, but to the Nation.

Storage and disposal of nuclear waste is not a technical problem. It is a political problem and an emotional problem. It is a problem that boils down to two very simple facts. Nuclear waste must be disposed of somewhere but no one wants it in his or her State.

We have been around this block many times before. We have heard from States that they do not want nuclear waste in their backyard. We have heard from the Department of Energy that it must go somewhere. We have heard from the utilities that it is already in storage on site at nuclear reactors all around the country.

The simple fact is that nuclear waste is already in temporary storage in 33 States around the country. When Congress amended the Nuclear Waste Policy Act in 1987, the Department of Energy was directed to conduct site characterizations and testing at the Yucca Mountain site in Nevada.

The goal of the scientific program is to determine whether the site is suitable for a repository. Only after that extensive testing program will the Department, the Nuclear Regulatory Commission and the scientific community be able to determine whether the site is suitable. Unfortunately, more than 3 years later, we have not even begun that testing program.

The Department's program is ready to go but they have not been able to obtain the necessary State permits. We have had litigation, we have had contentious debate, but we have not had any testing. And we still do not know anything more than we knew in 1987 about the technical suitability of that site.

Today, we have gathered the key players in the nuclear waste debate. We will hear from the State of Nevada. We will hear from the Department of Energy. We will hear from the Nuclear Regulatory Commission, and we will hear from the Nuclear Waste Technical Review Board.

There are three questions that need to be addressed today. First, is the Department of Energy ready to begin site characterization at Yucca Mountain? Second, is there any reason to disqualify the Yucca Mountain site at this time? That is, disqualify it from further characterization. And third, is there any possibility for reaching an agreement between the Federal Government and the State of Nevada that will allow access to the site to conduct the testing required to assess its suitability.

I know our witnesses today will address themselves to that question. Let me say, on a personal level, first of all, that I understand the politics of this situation. You see, my State at one time was being considered as a repository. We have a big salt dome down there and the political feeling in my State was just like it is in Nevada. I understand these things.

But as Chairman of this committee, I have a responsibility. Senator Wallop has a responsibility. We have got to help solve this problem. The law gives us this responsibility.

This is not one of those jobs I volunteered for. It sometimes puts me at odds with two of my very good friends here in the Senate, Senator Bryan and Senator Reid. We work together on most all other things and we have to be, as dictated by the politics of this thing, on opposite sides of this question.

So, Governor, I understand what the politics dictate. I look forward to meeting you today. I have not had the opportunity yet to do so and I hope we will get to know one another.

I know we will have a good relationship because it is our view on this committee that we want to deal with you honestly and fairly. We want to give every consideration to the State of Nevada and to all of your desires to have this program conducted in a scientifically appropriate way and in a safe way. But we also understand the politics of it and we will try to be responsible in all those ways.

Having said that, we have got to solve this problem and I think you understand we do. And so with that, let me call on my distinguished ranking minority member, Senator Wallop, for his comments.

[The following letters were submitted for the record by the Chairman:]

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC, March 13, 1991.

Hon. BOB MILLER,
Governor, State of Nevada, Executive Chamber, Carson City, NV.

DEAR GOVERNOR MILLER: I regret that you will be unable to testify on March 21, 1991 at the Committee's oversight hearing on the Department of Energy's civilian nuclear waste program. This is a critical issue for both the Committee and the State of Nevada, and your input is extremely important. I trust that your designee will be able to speak on your behalf for the State of Nevada.

As you know, the Committee is very concerned about the inability of the Department of Energy to initiate site characterization activities at the Yucca Mountain site to date. However, we are also interested in working cooperatively with you to

the extent that is possible. I am writing to you today in an attempt to determine if a cooperative approach is possible.

When Congress enacted the 1987 amendments to the Nuclear Waste Policy Act, it was fully anticipated that an extensive site characterization program would be initiated at Yucca Mountain to assess the suitability of the site for a repository. Furthermore, fully believe that it is only through that extensive testing program that the Department and the scientific community will be able to determine whether or not the Yucca Mountain site is suitable.

The State of Nevada has raised a series of technical concerns about the safety of a potential repository at Yucca Mountain. State officials have gone further to say with certainty the view that it would not be safe to site a repository at Yucca Mountain and that the site should now be disqualified from consideration. Nevada's recent lawsuit in the U.S. Court of Appeals for the Ninth Circuit held as a premise the belief that the site should now be disqualified on technical grounds. This litigation, though unsuccessful, has caused a significant delay not only in initiation of the Department of Energy's site characterization program but also in the final resolution of the technical suitability of the site. Further litigation will simply postpone any objective evaluation of the suitability of the site.

While I respect the state's view that there is an adequate technical basis to disqualify the site from further consideration, I disagree with that view. More importantly, the Ninth Circuit and the U.S. Supreme Court have rejected the state's contention that the site should be disqualified at this time.

I believe that the time has come to try and reach some agreement with the State of Nevada that will allow the characterization and testing of the Yucca Mountain site. The State has expressed confidence that Yucca Mountain will not pass technical muster. Therefore, I think it would be in the best interest of the State of Nevada to get on with the site characterization process so that the technical data can be gathered to prove or disprove the suitability of the site.

I believe this issue boils down to one simple question that must be answered affirmatively or negatively: Will the State of Nevada cooperate to issue the permits necessary to characterize the Yucca Mountain site to find out the answer to those technical questions that will either prove or disprove the suitability of the site?

I hope that the State of Nevada will answer this question affirmatively. Otherwise, I believe that the Congress will have no choice but to pursue the legislation submitted by the Department of Energy as part of the Administration's National Energy Strategy. That legislation reiterates the Department's authority to characterize the Yucca Mountain site notwithstanding the refusal of the State of Nevada to issue permits required under state law.

I am certain that the Department of Energy already has sufficient authority to conduct site characterization activities at Yucca Mountain. The legislation submitted by the Administration, however, would make that authority unequivocal.

It is my sincere hope that it will be possible to reach some agreement between the federal government and the State of Nevada that will allow site characterization of Yucca Mountain. In anticipation of the Committee's March 21 hearing, I ask that your designee providing testimony next week be prepared to answer the question of whether a cooperative approach to site characterization will be possible.

Sincerely,

J. BENNETT JOHNSTON, *Chairman.*

THE SECRETARY OF ENERGY,
Washington, DC, March 13, 1991.

Hon. BOB MILLER,
Governor of Nevada, Carson City, NV.

DEAR GOVERNOR MILLER: Now that the United States Supreme Court has let stand the decision of the Ninth Circuit Court of Appeals in *Nevada* v. *Watkins*, the way is clear for us to join in ensuring the fulfillment of Congress' mandate to objectively evaluate the suitability of the Yucca Mountain site as a potential location for a high-level waste repository. I am writing to urge cooperation between the State of Nevada and the Department of Energy in this process.

In response to prior recommendations from the State of Nevada and others, the Department has prioritized its plans for scientific evaluation activities in order to determine as rapidly as possible if the site is qualified or disqualified as a potential repository location. The Department has also established its readiness to proceed expeditiously in this process; has put into place both policy and capability to make raw data available to the State of Nevada and others as soon as possible; has com-

mitted to a policy of open, external review of technical plans and findings by expert groups such as the Nuclear Waste Technical Review Board; and has begun development of the bases for ultimately making a suitability evaluation, using a process involving external reviews.

The Department has taken significant steps upon which a strong and effective partnership with your State in the Yucca Mountain site evaluation process can take place. We have established a community of professional expertise and critique which, through national and international oversight activities, draws on worldwide personnel of the highest capabilities in all relevant disciplines to help assure that our environmental, technical, and socioeconomic work is sound. We would welcome the input of the professional resources of the State of Nevada as a partner in this process.

I firmly believe that expeditious action to move forward with evaluation of the Yucca Mountain site is not only the Department's mission as established by law but will serve the best interests of the State of Nevada. I stand ready to work with Nevada, and I look forward to your joining me in seeing to it that the objective evaluation of the Yucca Mountain site is successfully completed.

Sincerely,

JAMES D. WATKINS,
Admiral, U.S. Navy (Retired).

STATEMENT OF HON. MALCOLM WALLOP, U.S. SENATOR FROM WYOMING

Senator WALLOP. Thank you, Mr. Chairman, and may I say that I subscribe to your remarks and welcome the hearing this morning because I think it is important.

It focuses on the status of our national program to dispose of nuclear waste. So far, efforts to deal faithfully and responsibly with the issue have been stymied by the actions of one State, Nevada.

At the onset, let me say that I am among the strongest supporters of States' rights in the Congress. It has always been my belief and it remains my belief, that broad guidelines set forth by the Federal Government are best implemented by governors and legislators closest to any given problem.

But that unique contract is predicated on the willingness of both the Federal Government and the States to act in good faith. Students of history will recall a grand experiment based on a one-State veto called the Articles of Confederation. That experiment failed.

For the last 200 years, Congress has struggled to find a balance between federalism and Federal preemption. Indeed, one of the primary reasons for a Senate in a bicameral legislature is to safeguard the rights of the less populous States against the predatory actions of the more populous ones.

In the early 1970's, for example, there were those in Washington who worried that my State was becoming the banana republic of energy. They feared that populists and ranchers would snooker elected officials into prohibiting the mining of the Nation's low-sulphur coal.

Wyoming people knew the coal belonged to the Federal Government but they were the ones who were going to suffer from the dynamite blasts that would crack the foundations of their homes, the fugitive dust from massive earth movers that would choke their cities and blind their cattle, and careless drag lines that would sever vital aquifers and crowds of people that were already overwhelming schools, and water, and sewer systems, and law and order.

Well, we did not become a banana republic. The Governor, the legislature, ranchers, environmentalists, the miners, and the Government all sat down together and crafted a State surface mining law that became the model for the 1977 Federal Surface Mining Control and Reclamation law.

And today, Wyoming leads the Nation in annual coal production and does so in an environmentally sound manner that has become the world class standard.

Why did we succeed? Because we all worked together with a respect toward local concerns and an eye on the national interest.

Twenty years later, the State of Nevada faces a similar challenge, but instead of low-sulphur coal, the controversy centers around nuclear waste storage at Yucca Mountain.

I sense and feel the passions, as does the chairman, of the people of Nevada, that they are as heartfelt and as genuine as were those of my neighbors in the Powder River basin of Wyoming. At today's hearing, I hope to find out if that same spirit of compromise and accommodation is also there.

Nuclear energy is an important part of America's national energy security. And it is here to stay. Critics charge the State of Nevada has taken persistent steps to undermine this important pillar of the Nation's energy security strategy. I hope and believe fundamentally that these accusations are false.

If the hearing reveals that not to be the case, even strong supporters of States' rights such as myself will be hard pressed to argue against Federal preemption. And I hope that that is not where we come to.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Wallop.

Senator Craig.

STATEMENT OF HON. LARRY E. CRAIG, U.S. SENATOR FROM IDAHO

Senator CRAIG. Mr. Chairman, thank you very much. And a special thanks for bringing this issue to the committee.

It is an issue that has to be resolved. It is an issue that I participated in, both on the House side and now the Senate side, and it is good to see my former colleagues in the House, Barbara Vucanovich and Congressman Bilbray, with us.

We worked on this issue and ultimately recognizing that what we had done in 1982 was not going to work, we crafted the legislation of 1987 that brings the State of Nevada, in force, before us today.

We did arbitrarily reach out and pick Yucca Mountain—there was no question about that—for site characterization, types of studies to see if it was of the nature necessary to begin a process that would bring us to a site that could handle high-level waste.

I am sensitive to it and I reflect much of the attitude of my colleague from Wyoming on a States' rights issue. But I am sensitive to it because we have a lot of that type of material suspended in deep water vats in the State of Idaho waiting to find a permanent site for it to be reposed.

And I also recognize that nearly everyone, because of the sensitivity of our concern about the environment today, has been infected by the virus that brings Nevada to us today. And that virus is the "not in our"—or my—"backyard" virus.

But reality says much of what is true today. We have to deal with it. And I would hope that we would deal and could deal with it in a cooperative fashion. In fact, I chuckle a little bit when I look at the detail to which the State of Nevada has successfully gone to block the Federal Government in its move, 15 to 20 permits. To me, it is kind of like the Federal Government getting a dose of its own medicine.

When we see out in my State and in typical Western States with large public lands, when the private sector wants to move, the Federal Government nails them to the ground with process after process, and procedure after procedure. Nevada, congratulations. You have done well to date. But that does not solve the problem. And we do have one and it must be resolved.

We have been in hours of hearings at the direction of our Chairman over the attempt to develop a national energy strategy and policy for this country. And as a Nation we will be fool-hardy if we do not. All of us recognize that in that strategy, the collective strategy of an energy blend, the nuclear industry must play a role.

And to play a role, it must find and we must find for that industry, a place where its materials can be safe from the public and the public can recognize that safety. And if we fail to do that, we will have rendered to its grave, the nuclear industry and a major power component of this country.

There is no replacement. We know that now. Some would suggest that we could conserve our way out of it. Some are now suggesting we could literally farm our way out of it. But we all know that is simply not the case. But we have to have a little bit of it all and we must work cooperatively.

I was not at all happy with the Nuclear Waste Policy Act of 1987. It did something I did not want to happen. I wanted a regional approach. I wanted regional repositories. I did not want to see the waste of the east shipped to the west. But in the end I supported it because I knew we had to solve the problem. The problem was not being solved. And that we had to move toward an area that had the sparse population of some of our Western States and that might have the geological structure necessary to provide the stability and security that we had to have.

Now, we are asking that we be allowed to do the necessary scientific studies to determine whether this particular site is valid, and stable, and would serve as the Nation needs the service of it. And I would hope that we can work cooperatively together to do so. Because if it begins to be a push and shove issue, let me suggest to you, and I certainly have no qualms in doing it, that I will err on the side of States' rights.

The development of the cooperation that my colleague from Wyoming speaks is what has been the hallmark of this country and is what has brought about the stability of the union. But at the same time, Western States have, for years, found themselves somewhat victims of a large Federal Government that simply failed to recognize the value of those States at times, and their sovereignty,

simply because of the nature of the makeup of the public lands of those States. And that should not happen here. And it will not happen if we work cooperatively together.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Craig.

We begin this morning with the Governor of Nevada.

Governor, your colleagues in the Senate, Senator Reid and Senator Bryan, give you high marks, and I agree with them on almost everything they say. So, it must be true. We welcome you to the committee. Governor Bob Miller of Nevada.

STATEMENT OF HON. BOB MILLER, GOVERNOR OF NEVADA

Governor MILLER. Thank you, Mr. Chairman and members of the Senate Committee on Energy and Natural Resources.

I have submitted a written statement that I would appreciate having entered into the record.

In my summary this morning, I will be touching on many of the points that are contained in that written statement. Let me begin, Mr. Chairman, as I am sure you and the other Senators are aware, that Nevada did not volunteer for this assignment either, as you did not.

And our position, I think we speak commonly as one. As you can see, all of our congressional delegation is present, bipartisanly and representing both Houses. I would also like to begin by introducing two members of the Nevada legislature who have flown out to join us here today. To the far left is Senator John Vergiels of Las Vegas, who is the Senate Majority Leader. And to the far right is the Assembly Speaker, Joe Dini, who is now serving in his 25th year in the Nevada Assembly. And were it not for a last-minute family illness, we would also be joined by the Senate Minority Leader, Bill Raggio.

First, let me say that I appreciate the invitation to come before this committee today. Much has taken place in the last 3 years regarding the nuclear waste program and this is the first invitation from Congress to present Nevada's views that we have received since late 1987, prior to the adoption of the Nuclear Waste Policy Act amendments.

Before speaking to the central issues which you have raised in your invitation to today's hearing, Mr. Chairman, I believe it is necessary to address a misconception that you have stated in your letter to me and which I believe I have heard again this morning and is often heard from DOE representatives.

You have stated that Nevada's recent litigation, though unsuccessful, has caused a significant delay, not only in initiation of the Department of Energy's site characterization program, but also in the final resolution of the technical suitability of the site.

I believe that the reality is, it has only been since late January of this year, 1991, that the DOE has said that it was ready to begin any site characterization work at Yucca Mountain. And this work would be under the first two of the 108 study plans DOE has said are necessary to implement its December 1988 site characterization plan.

The lack of a fully qualified quality assurance program, which is a prerequisite to beginning site characterization, has plagued the DOE program throughout the years and is not yet fully resolved.

Secretary Watkins acknowledged this and other problems in his November 1989 report to Congress reassessing the DOE program. However, he also did suggest that Nevada's opposition was a partial and secondary cause of delay. The United States General Accounting Office reported a year ago in March of 1990, that there were three reasons for the program delay.

The first was the lack of a qualified quantity assurance program. Second, uncertainty over the exploratory shaft configuration and design basis. Uncertainty, which today, has yet to be resolved with the DOE and with the NRC. And finally, the lack of Nevada environmental permits for on-site work done by DOE.

Now, there is now a new element in the DOE's plan process which was not contemplated in the earlier site characterization plan, the development of a methodology for early site suitability evaluation. This work, it appears, may take as much as another year to complete.

Taken together, it is clear that Nevada's litigation, until very recently, may have been a contributory cause of delay. But certainly was not the primary cause. And the DOE is still not ready to launch a full scale effort at on-site characterization of Yucca Mountain.

A few words about Nevada's litigation, the *Nevada* v. *Watkins* case. This case, which the Supreme Court just this month declined to hear on appeal from the Ninth Circuit, addresses significant matter of law. As is our legal right, which is no different from any other State, we sought to affirm that our legal actions of 1989, disapproving and outlawing the siting of a repository at Yucca Mountain, constituted a valid veto of the site under the Nuclear Waste Policy Act.

Well, this case was in litigation in the Ninth Circuit, and during the appeal process, it was our position that we had exercised a valid veto action and that was not overruled by the Congress. And that the Department, therefore, lacked authority to pursue characterization of Yucca Mountain.

The Ninth Circuit ruled that our notice of disapproval was premature under the Nuclear Waste Policy Act, and that the Government had the authority to proceed with site characterization. We disagreed and followed the established path of appeal to the Supreme Court.

As you may be aware, having exhausted this effort for legal remedy, Nevada regulators have informed the DOE that they are prepared to begin processing its permit applications when they are received in proper form.

Just yesterday, this information was also documented before the United States District Court in Las Vegas in answer to the Government's suit against Nevada over these very same permit applications.

As Governor, I have no authority in directing the outcome of these regulatory reviews. But I can tell you that they will be reviewed on the merits in the same manner as our many other

permit applications processed by our regulatory agencies every year.

Now, regarding your question of Nevada's future cooperation in the nuclear waste repository siting program under the 1987 amendments to the Nuclear Waste Policy Act, the large majority of Nevadans, not surprisingly, continue to express no confidence in the safety of the Federal Government's nuclear waste program.

We have been subjected to the political manipulations of the program which has resulted in the nuclear waste policy abandonment of the key principles of the 1982 Nuclear Waste Policy Act.

The initial intended process of technical screening of alternative sites, in order to build confidence in the ultimate selection of a geologic repository location, has been emasculated for stated reasons of cost and schedule. The initially intended geographic or regional equity in siting at least two repositories, taking into account the locations of waste generation, and those who benefit from the electricity produced, has been set aside for reconsideration in the distant future.

In addition, the State of Nevada and some potentially affected local jurisdictions have been forced to gain affirmation from courts of their statutory rights for effective oversight and participation in the program.

Nevada's ability to carry out its mandated oversight of the waste program continues to be constricted through the appropriations process. While the DOE's level of effort, subject to our oversight, has not diminished.

The State of Nevada's technical analysis of existing data supporting our assertion that the Yucca Mountain site should be technically disqualified under the DOE's guidelines, has never received substantive response or been technically refuted by the DOE.

The DOE has yet to even respond to our substantial technical comments on the site characterization plan which were submitted to DOE in September of 1989. Although they have responded to all other commenters, including the NRC.

Also, the Nevada legislature and other groups have been subjected to the groundless and unauthorized statement by the Yucca Mountain project manager, that our cooperation with the DOE program could result in a $50 million to $100 million gift to the State of Nevada's general fund. This is generally perceived as a bold and certainly unacceptable and disruptive effort by DOE to trade our needed independent oversight and safety review for dollars.

And as the last of these people and events that have undermined the confidence of Nevada in the nuclear waste program, John Bartlett, the waste program director, has attempted to malign the State before Congress for pursuit of its legitimate rights to the litigation process, referring to our appeal to the Supreme Court as a refusal, and I quote, "to accept the Court's decision."

Collectively, these and other Federal actions regarding the nuclear waste program implementation are far from being conducive to an atmosphere that might even lead to a dialogue regarding our cooperation.

Before closing, I must take note of the unprecedented proposal in the National Energy Strategy to which you refer in your letter inviting me here this morning to this hearing to legislatively strip

Nevada of its statutory and legislative authority as regarding the DOE characterization of Yucca Mountain.

On February 14, 1991, I, the Nevada Attorney General, and the complete delegation—our congressional delegation that are present this morning—wrote President Bush asking that this proposal be deleted from the final report of the administration. Various reasons for objecting to the proposal were cited, including its dangerous precedent and questionable constitutionality. A copy of that letter is attached to my written statement to the committee.

The citizens of Nevada have entrusted the State with protection of their health and safety relative to high-level nuclear waste transportation and storage in our State. It is their trust and firm opposition to the Yucca Mountain project which have directed the existing unprecedented level of unified and bipartisan support for the State's challenges to this unwanted and intrusive Federal program.

There are those who have recently suggested that Nevadans' resolve in their opposition to the Yucca Mountain project is declining. In fact, the opposite is true. That is the reason that all of the congressional delegation and Senate and Assembly leadership have joined me today to help eradicate any notion that such wishful thinking by proponents of the project might become self-fulfilling.

As long as the fundamental principles of the 1982 Nuclear Waste Policy Act remain set aside and the Federal Government persists in seeking to constrict the State's constitutional and statutory rights, as well as otherwise interfering in State matters, Nevadans will continue to oppose the imposition of this project, using any lawful means available.

Thank you for your attention.

[The prepared statement of Governor Miller follows:]

PREPARED STATEMENT OF BOB MILLER, GOVERNOR, STATE OF NEVADA

Mr. Chairman and Members of the Senate Committee on Energy and Natural Resources:

I appreciate your invitation to express Nevada's views before this Committee regarding the U.S. Department of Energy's implementation of the Nuclear Waste Policy Act, as amended. Much has transpired in the last three years, and this is the first invitation for our testimony to Congress on this matter that has been received since late 1987, prior to adoption of the Nuclear Waste Policy Amendments Act.

As you are aware, the possibility of Nevada being forced to host the nation's high-level nuclear waste repository at Yucca Mountain is of great concern to the large majority of Nevadans. The concerns are largely over whether public health and safety, the environment, and the State's economy can and will be adequately protected under this first-of-a-kind federal program.

Nevadans have watched and been subjected to the political manipulations of the waste program which have resulted in the abandonment of key principles of the Nuclear Waste Policy Act in just eight short years since its passage. The initially intended process of technical screening of alternative sites, in order to build confidence in the ultimate selection of a geologic repository location has been emasculated for stated reasons of cost and schedule. The initially intended geographic, or regional equity in siting at least two repositories, taking into account the location of nuclear waste generation and the benefits of the produced electricity, has been set aside for future reconsideration. Furthermore, in the face of obstruction by the Department of Energy, the State of Nevada and some potentially affected local jurisdictions have been forced to gain judicial affirmation of their statutory rights for effective participation in the program.

The overwhelming reaction of Nevadans—which is one of no confidence in the safety of the federal government's nuclear waste program—should come as no surprise. An independent poll conducted last fall for the Las Vegas Review Journal re-

vealed that more than three of every four Nevadans oppose the siting of a repository in Nevada. Of further importance is the finding that sixty-eight percent of Nevadans do not believe "the federal government will be honest in the scientific research it does to determine if nuclear waste can be safely stored at Yucca Mountain." These results are consistent with those of earlier findings by the State, which include the statistically significant finding of greater public trust in Nevada state government leaders than in the federal government to act properly regarding a nuclear waste repository.

The citizens of Nevada have placed their trust in the hands of the State for protection of their health and safety relative to high-level nuclear waste transportation and storage. In contrast, they have voiced their lack of confidence in the institutions of the federal government to meet their responsibilities for such protection. It is this trust of the citizens and their firm opposition to the Yucca Mountain project which has directed the State's challenges of the program. It also has reinforced the necessity of the State to remain independent, and exercise its legal rights of oversight of the federal nuclear waste program.

By continuing to attempt to limit and diminish the State's capabilities for independent oversight of the DOE program, and threatening to preempt the State's statutory and regulatory authority relative to the Yucca Mountain project, the federal government has only further invigorated the citizens' opposition to the program.

PROGRAM DELAYS

Before discussing your central question regarding Nevada's future cooperation with the Department of Energy in characterization of the Yucca Mountain candidate repository site, a misconception stated in the Committee's letter of invitation to this hearing, and often stated by Department of Energy officials should be clarified. The March 13, 1991, letter states Nevada's recent "litigation, though unsuccessful, has caused a significant delay not only in initiation of the Department of Energy's site characterization program but also in the final resolution of the technical suitability of the site." This statement is misleading.

The General Accounting Office, in its Quarterly Report of the status of the waste program as of September 30, 1989 (GAO RCED 90–103, March 2, 1990), evaluated the reasons for the delays in the repository program. It cited three reasons for the delays: first, the lack of a qualified Quality Assurance program; second, uncertainty over the exploratory shaft configuration and design; and third, the lack of state permits for on-site work.

In the more than three years since adoption of the Nuclear Waste Policy Amendments Act of 1987, the Department of Energy has yet to establish a fully qualified Quality Assurance program pursuant to the requirements of the Nuclear Regulatory Commission, which is a prerequisite for initiating site characterization work at Yucca Mountain. Only since late January of this year has the Department said that it was ready to begin Yucca Mountain work under the first two of the planned 108 Study Plans it has identified as being needed to implement its December, 1988, Site Characterization Plan. As of the end of February, 1991, only four Department Study Plans had passed the needed acceptance review of the NRC, 12 were in review at the NRC, 46 were in various stages of review or revision within the Department, and the status of the remainder of the plans has not been reported.

Furthermore, as a result of comments not only from the State of Nevada, but from the NRC and the Nuclear Waste Technical Review Board, significant elements of the Site Characterization Plan may be subject to revision, as also suggested by the above-mentioned GAO report. This would result from new decisions to be made in response to the exploratory shaft alternatives study and the Calico Hills risk-benefit study, both just completed by DOE staff within the last month, and the yet to be completed early site suitability evaluation study, which is a program element that did not exist in the DOE's original site characterization planning.

In November, 1989, two years after the 1987 amendments act, Energy Secretary Watkins acknowledged the delay and organizational problems of the program and reported to Congress that "the program cannot be effectively executed in its present form." While implicating Nevada's opposition as a partial and secondary cause of delay, he focused on delays due to the Department's failures in its planning approach for site characterization (the remediation of which are the studies described in the above paragraph, and adoption of an acceptable Quality Assurance program). Secretary Watkins stated:

> These delays are attributable to (1) underestimation by the DOE of the impact of regulatory requirements for quality assurance and design control on a repository schedule that was unrealistically ambitious and (2) the mis-

perception that the program is simply a construction project rather than a first-of-its-kind scientific investigation.

COOPERATION

Throughout its implementation of the State policy opposing the siting of a high-level nuclear waste repository at Yucca Mountain, Nevada has pursued its case through established administrative and legal processes. And, we will continue to do so.

With the complexity and unprecedented nature of the Nuclear Waste Policy Act, it should be expected that legitimate legal issues will arise that require resolution regardless of the delay that may be inflicted on the program. To proclaim that Nevada should not pursue legitimate legal issues and seek judicial remedies in its challenge of this program, or to attempt to limit the State's ability to seek effective legal remedy is contrary to the fundamental guarantees of our democratic government.

Notwithstanding the matter of Nevada issuing permits for DOE's characterization of Yucca Mountain, the larger issue which has been raised regarding Nevada's cooperation with the DOE's program must be examined in light of existing circumstances.

Since the passage of the 1987 amendment to the Nuclear Waste Policy Act, Nevada's increasingly adamant opposition to the selection of Yucca Mountain as the only site in the nation to be characterized for a high-level nuclear waste repository has been met with federal challenges that only serve to inflame the dispute. A few examples that severely test any thoughts regarding participation in a dialogue over cooperation are as follows:

Nevada's ability to carry out its mandated oversight of the DOE program has been constricted severely through the federal appropriation process, while the DOE's level of effort subject to our oversight has not diminished.

Nevada's substantial technical comments, submitted in September, 1989, on the DOE's site characterization plan, have yet to receive responses, although responses to all other commenting parties, including the NRC, have been issued.

Nevada's technical analyses supporting its assertion that the Yucca Mountain site has geologic and hydrologic features that already should have resulted in its disqualification, pursuant to DOE's site recommendation guidelines, has never received substantive response, nor has the DOE provided any technical basis for refuting our assertion.

Nevada has numerous unanswered requests for existing Yucca Mountain site data pending with the DOE, some even pre-dating the 1987 Amendments Act. At the same time, Nevada's ability to independently collect site data is restricted by the DOE's attempts to limit the scope of the State's inquiry, and its assertion of control over State scientists' access to the site.

In an effort to build local support for the project, the DOE Yucca Mountain project manager recently has made the groundless and unauthorized statement to the Nevada legislature, and others, that Nevada's cooperation with this federal project could result in a $50 to $100 million unrestricted gift to the State of Nevada general fund. The suggestion was made that Nevada could seek this gift through the Nuclear Waste Negotiator if the State would permit site characterization work to continue at Yucca Mountain.

In attempting to discredit and malign Nevada for its opposition to this unwanted project, John Bartlett, director of the DOE Office of Civilian Radioactive Waste Management, has made false statements to Congress, such as characterizing our appeal of *Nevada* v. *Watkins* to the Supreme Court as a refusal "to accept the courts' decisions."

This is a partial list of actions which have served to illustrate to Nevadans that our state is the victim of a strident federal campaign to not only discount our legitimate technical concern over the safety of a potential Yucca Mountain high-level nuclear waste repository, but also to disrupt our state's social and political fiber. Such unprecedented federal action is far from being conducive to an atmosphere that might foster our cooperation.

As long as the fundamental principles of the 1982 Nuclear Waste Policy Act regarding repository site screening and selection and the intended regional equity in site selection remain set aside, and the federal government persists in efforts to constrict the State's constitutional and statutory rights as well as otherwise interfering in State matters, Nevada will continue to oppose the imposition of this unwanted project on the State through any available lawful means.

[Attachment.]

STATE OF NEVADA,
EXECUTIVE CHAMBER,
Carson City, NV, February 14, 1991.

Mr. PRESIDENT,
The White House, Washington, DC.

DEAR MR. PRESIDENT: We are writing to convey to you our grave concern regarding the Nuclear Waste Management section of the National Energy Strategy. The energy strategy document proposes that the Nuclear Waste Policy Act be amended to strip the State of Nevada and local governments of their statutory and regulatory authorities as they affect the continuation of the U.S. Department of Energy work at the candidate Yucca Mountain high-level nuclear waste repository site. The document further proposes that the State's right to challenge the constitutionality of this unprecedented federal action be limited to sixty days of its enactment; further, it prohibits the court in which State action is brought from enjoining the DOE's activities at Yucca Mountain.

The proposed amendment of this nation's nuclear waste policy subverts the democratic process and threatens the foundation of state-federal relations, not only for Nevada, but for all states that may find themselves in a difficult conflict with stated federal purposes in the future.

For sound and widely supported reasons, states have been provided the opportunity to accept delegation of federal regulatory authority under various environmental and other statutes. The proposal to intrude upon this established process for purposes of resolving a unique, statute-driven conflict with a single state sets a precedent that tests for all states the full meaning and intent of the process of federal-state delegation of authorities.

Furthermore, the proposed nuclear waste policy amendment sets a precedent which dangerously imposes federal interference on state and local governmental rights, authorities and jurisdictions. And, it boldly infringes upon the separation of powers which have empowered the courts to fulfill the constitutional adjudication of questions of federalism.

The significance of this matter's treatment in the National Energy Strategy is of such magnitude that it may color and jeopardize the national debate of what some might otherwise consider to be the merits of the approach to providing an energy policy to keep our nation healthy and secure.

It is our most sincere request that the Nuclear Waste Management section of the proposed National Energy Strategy be deleted, and permit the traditional forces of our democratic principles and processes to prevail in this incident of disagreement between a state and the federal government. To do otherwise promotes a dangerously foreboding precedent for future state-federal relations, especially in areas of ongoing national concern over protection of public health and safety and the environment as related to the many already contaminated federal facilities nationwide.

We look forward to your attention to this matter of urgent concern to Nevada and all of the states of our Republic.

BOB MILLER, *Governor,*
RICHARD H. BRYAN, *U.S. Senator,*
HARRY REID, *U.S. Senator,*
JAMES H. BILBRAY, U.S. Representative,
BARBARA F. VUCANOVICH, *U.S. Representative,*
FRANKIE SUE DEL PAPA, *Attorney General.*

The CHAIRMAN. Thank you very much, Governor.

Next, we are pleased to hear from the senior Senator from Nevada, our good friend Harry Reid.

Senator REID. Thank you very much, Mr. Chairman. I would ask the permission of the committee to insert in the record a statement that I have in writing from Clark County, Nevada.

The CHAIRMAN. Without objection.

[The statement referred to follows:]

PREPARED STATEMENT OF CLARK COUNTY, NV

Mr. Chairman, Senators: Clark County, Nevada is pleased to have the opportunity to provide testimony on the budget authorization for the high-level nuclear waste

program. As you know, Clark County is a contiguous county to Nye County, where the Department of Energy is considering a site for the nation's first high-level nuclear waste repository. As a contiguous county, we have requested and received "affected local government" status as authorized in the Nuclear Waste Policy Amendments Act of 1987 (NWPAA), and have established a comprehensive oversight program.

In carrying out the oversight program mandated by the NWPAA of 1987, Clark County has appreciated this Committee's role in the authorization of funds to support our program. In this regard, Mr. Chairman, the principal thrust of this testimony concerns what we perceived to be a degradation of the technical and financial independence of Clark County's oversight. Congress, in formulating the provisions of NWPAA, recognized the importance of providing local governments with the ability to independently review Department of Energy (DOE) activities and potential impacts of the proposed repository. DOE, however, after providing an initial period of independence, has systematically expanded its oversight over affected local government oversight over DOE activities. Not only has local government technical control gradually been eroded, but DOE has also systematically reduced funding for local government oversight.

Before discussing these oversight issues we need to begin by reiterating Clark County's opposition to the nuclear waste provisions of the President's proposed National Energy Strategy. As reflected in a recent resolution of the Clark County Board of Commissioners, Clark County firmly opposes any suggestion that state or local government permitting authority be suspended in order to facilitate the siting of a nuclear waste repository in Nevada. The blanket suspension of Nevada's permitting authority would set a very dangerous precedent for the rights of all states and local governments to regulate the environmental effects of nuclear and other hazardous facilities.

The principal objective of this oversight testimony, however, is to urge Congress to provide sufficient independence for affected local governments to fulfill their responsibilities under NWPAA. The two essential components of such independence are: (1) direct control over our own technical studies; and (2) sufficient funding to carry out these studies.

The president's proposed Nuclear Waste Disposal Fund appropriations language presently stipulates that:

> Provided further, That not more than [$4,892,000] *$4,000,000* may be provided to affected local governments, as defined in the Act, to conduct appropriate activities pursuant to the Act: Provided further, *That the distribution of the funding herein provided between the affected units of local government shall be determined by the USDOE and made available to the State and affected units of local government by direct payment.* (emphasis in original)

The issue of technical independence appears to have been addressed by the "direct payment" provision of the proposed language changes. Dr. John Bartlett, Director of OCRWM, and Mr. Carl Gertz, Director of the Yucca Mountain Project Office, have publicly maintained that DOE has no desire to "control" local government oversight activities and that it represents an obvious conflict of interest for them to do so. Clark County fully supports the DOE position with regard to the technical independence of affected local government oversight. Direct payments will assure that DOE is not asked to determine appropriate local government oversight activities in relation to DOE Yucca Mountain repository-related activities.

Unfortunately, other aspects of this language tend to perpetuate DOE control over the distribution of funding "between" affected units of local government. Congress never intended for DOE to distribute a fixed resource among competing local governments. It is not difficult to imagine how divisive such a process can become. Since there is really no purpose served by vesting DOE with control over the allocative process, we are asking Congress to bear responsibility for the determination of funding requirements for ALL participating entities.

As a final point, DOE proposes that funding for local governments should be derived from some "fixed" amount, regardless of the number of affected entities, actual or potential risks, or activities. Clark County considers this approach to be inappropriate, particularly in view of the potential risks. The siting the nation's first high-level nuclear waste repository is one of the most profound and enduring decisions to be considered by Congress.

Clark County concerns are very real. If Yucca Mountain is ultimately developed, it will affect, to one degree or another, the residents of southern Nevada for the next 10,000 years or 500 generations. Even assuming a constant population, this imposes a responsibility for hundreds of millions of future residents. If the established

Nuclear Test Site residency and transportation patterns hold true for the proposed repository, then more than 90% of the workers associated with the program will be from Clark County with related impacts. Members of the Committee will also recognize that the issue itself has created considerable local uncertainty and, given heightened public awareness, aggravated political polarization. We would also add that even the prospect of a high-level nuclear waste repository threatens to stigmatize an area dependent almost exclusively on recreation, tourism, and retirement decisions.

In light of the foregoing, Clark County asks that this Committee modify the proposed Nuclear Waste Fund language in a way that will ensure the technical and financial independence of affected local governments under the NWPAA mandate. The following provisional language not only addresses our concerns, it would distance DOE from any tacit or implicit approval of the activities of the affected parties. Furthermore, if funded at adequate levels, we believe the information developed by the affected parties will be of critical importance to DOE and Congress in anticipating potential problem, particularly in light of the fact that DOE has no related socioeconomic studies underway or contemplated. After surmounting many obstacles, and enduring major delays in bringing our program on line, our study Paiutes program is now fully underway. Major reductions at this time would seriously undermine our ability to meet NWPAA mandates.

> The distribution of the funding herein provided between the State of Nevada and affected units of local government shall be _____ to the State of Nevada, _____ to Nye County, [FY 1991 request] to Clark County, and _____ to Lincoln County, by direct payment and shall be available until expended.

This language assures that: (1) the affected governments are provided direct appropriations from Congress without direct technical or budgetary control by DOE; (2) that sufficient funding is provided to assure the integrity of the individual programs; and (3) that inter-governmental conflict is not fomented as a direct consequence of DOE allocative processes. Finally, this language provides that funding shall be available until expended—a provision that allows affected local governments to manage their resources across fiscal boundaries, consistent with DOE's proposal.

Thank you for this opportunity to provide testimony. Clark County, or program staff, would be pleased to expand on these views or to answer any questions this committee may have.

STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM NEVADA

Senator REID. In 1987, Congress deemed that the Yucca Mountain site was the only site to be investigated to determine whether it was adequate to store the nuclear waste. Nevada, following the prescription spelled out in the Nuclear Waste Policy Act, passed legislation rejecting the nuclear waste dump.

Recently, the Supreme Court declined to review last September's 9th Circuit Court of Appeals decision rejecting Nevada's challenges of DOE's efforts to conduct scientific evaluations of Yucca Mountain. While the State of Nevada has failed so far to convince the courts that the Yucca Mountain site is unacceptable, it is a safe bet, as indicated by Governor Miller, that all legal remedies have not been fully exhausted.

The proposed nuclear waste dump is a product of political intrigue and of bureaucratic cowardice. Proceeding with this dangerous project would be negligent and scientifically stupid.

Admiral Watkins says that he did not write the law, he is only enforcing it. That is a cop-out, and Admiral Watkins knows it. If Admiral Watkins thinks the Screw Nevada bill I was a good piece of legislation, he should say so. If he thinks it was a product of politics and not science, he has a responsibility as a scientist to tell the truth. I have not seen him so quiet on other issues of equal importance.

Admiral Watkins and his employees at DOE also say that the only problem with this project is Nevada. Listening to them, you would think we should be grateful that DOE wants to dump 70,000 tons of radioactive garbage inside our State borders.

The nuclear waste dump problems are not isolated to Nevada, they affect the entire country. Our country is in danger from the nuclear waste dump project. If earthquakes or volcanic activity ever produce leakage, and there are scientists who say it will, and radioactivity leaks from Yucca Mountain, the entire world will live or die with the consequences. We have learned from Chernobyl that things nuclear are not things to take lightly.

On this issue Admiral Watkins may talk like Mother Theresa, but he has acted toward Nevada with all the patience and understanding of Jack the Ripper. In a press release issued by DOE on March 4, 1991, Admiral Watkins states, "We would welcome a cooperative and constructive approach with officials at all levels in the State of Nevada." But he has also expressed annoyance with the State's "obstructionist" approach, and vowed "We will not hesitate to recommend new legislation giving us additional tools to carry out our responsibility."

A provision in the administration's national energy legislation would allow the Department of Energy to proceed with its studies at Yucca Mountain without State approval. Preliminary scientific assessments have concluded that the Yucca Mountain site is host to an active volcano. We expect an unbiased scientific assessment into the geological stability of the Yucca Mountain site would support this conclusion.

With the furor and attention that has been focused on this issue, it raises serious questions regarding the impartiality of the parties involved. The fundamental issue is whether a fair hearing is possible on the scientific aspects of the site, a process for a 10,000-year installation, or will the process be subject to pressure by the administration and industry to trample over a deliberate and methodical investigation?

In our rush to establish public policy to deal with high-level radioactive waste, we neglected to take testimony from a most influential participant in this process—Mother Nature. As much as we want, we cannot legislate or regulate Mother Nature and science.

The Board of Radioactive Waste Management of the National Research Council reported that the current approach to construct the high-level nuclear waste dump is "bound to fail" because it expects what science cannot deliver, and that is certainty.

The process established by Congress dictated that the United States Nuclear Regulatory Commission would ultimately be responsible for licensing of the Nation's waste repository. The United States Nuclear Regulatory Commission was to be wholly independent and autonomous on this issue. Recently, however, a commissioner of this agency, the independent agency charged with the responsibility to develop criteria for, and perform the licensing of, the Nation's high-level waste repository stated that we ought to shift away from traditional, analytical methods and provide the Department of Energy greater freedom, if you can believe this, to juggle numbers.

I was extremely disappointed, to say the least, to have a report of the commissioner's statements related to me. Standards are set to provide for public health and safety. We do not compromise on health and safety, especially when we deal with things nuclear, by juggling numbers. This decision will have ramifications for a period that is 50—I repeat, 50—times longer than our Nation has been in existence.

There cannot be a quick fix to this problem. We must be right the first time around. If we must start out fresh in search of the optimal solution for dealing with high-level nuclear waste, who over the next 500 generations could disagree with us?

Thank you very much, Mr. Chairman, members of the committee.

The CHAIRMAN. Thank you very much, Senator Reid.

Next, we are glad to have our esteemed colleague, Senator Richard Bryan.

STATEMENT OF HON. RICHARD H. BRYAN, U.S. SENATOR FROM NEVADA

Senator BRYAN. Mr. Chairman, thank you very much. So often, when we talk about the problems inherent in nuclear waste, we use the esoteric and rather scientific, abstract types of problems—the volcanic problems, the hydrology problems, the seismic problems.

I am going to take just a moment or to, if I may, Mr. Chairman, and first ask your courtesy to include my written statement and make it a part of your record, and try to put this into context of where Nevadans are coming from so the members of this committee may have some understanding.

On January 3, 1961, Senator Craig, in your own home State, a nuclear reactor went critical. It exploded. Two men were killed instantaneously. A third man was also killed. Let me share with you just a moment what actually occurred.

Two operators were killed instantly. A control rod blown out of a pile speared one man through the groin and pinned his body to the roof. Those parts of the corpses which had been covered by clothing were buried in lead coffins placed inside of lead-lined vaults, but parts of the bodies directly exposed to radioactive materials—the heads and the hands—had to be amputated from those bodies and stored, awaiting a final burial ground, because they had become high-level nuclear waste.

So when we are talking about this issue, it is not—with the greatest respect to the members of this committee—a question of politics. It is a question of concern that Nevadans have about their public health and their safety.

Yesterday in the Washington Post, the New York Times, and the Wall Street Journal, it was brought home rather forcefully to my own attention how little we know about the problems that inhere with radioactivity more than 45 years after the successful detonation on July 16, 1945 in Alamagordo, New Mexico, of the first nuclear device.

The Journal of the American Medical Association, a highly respected body, has just issued a report that indicates that those

workers that were involved at the Oak Ridge National Laboratory in Tennessee from 1943 to 1972, in the study that was concluded, experience leukemia death rates 63 percent higher than those in a similar profile based upon their age.

In another reference that is found in the New York Times, I was impressed by this observation: scientists in and out of Government today note that the Federal limit for occupational exposure to radioactivity has been repeatedly lowered since the 1940's as more information about its hazards were discovered.

That suggests to me, Mr. Chairman and members of this committee, that we really do not know all of the answers. As my colleague, Senator Reid, has pointed out, we are talking about a project of 10,000. That is longer than all of the recorded history of our civilization, and we are talking about designing something that is to have a life expectancy to contain these very dangerous materials—indeed, the most lethal materials in the history of civilization.

As members of the Nevada delegation we, as each of you do, have a constitutional obligation to represent our State, to do the best that we can to protect the citizens and defend our interests, and we take that obligation, as I know each of you do, very seriously. So we are dealing here with a question of credibility, the credibility of an agency which in our own view has had that credibility irrevocably shattered.

I was in the 8th Grade when the first atmospheric detonation occurred at Frenchmen's Flat in Nevada, and I was in high school when thousands of troops came to Camp Desert Rock to participate in the atmospheric experience in which troops were placed just a few thousand yards from ground zero.

At the time, in the innocent 1950's, we were told there was absolutely no concern about health and safety—none whatsoever—and we believed that and we accepted that. In my own high school—Congressman Bilbray and I attended the same high school—we proudly had on the cover of our annual a picture of a nuclear explosion at Frenchmen's Flat.

Now, there is no responsible scientist in the world that would tell us today that it is safe to detonate in the atmosphere a nuclear device, and I would say that many in Southern Nevada and in our sister State to the East, in Utah, the down winders—and our colleagues Senator Hatch and Senator Garn feel very strongly about this—know the consequences of the lack of information that caused some very, very devastating impact to people who live in that area.

I would suggest, Mr. Chairman and members of the committee, that in 1982 when the Nuclear Waste Policy Act was passed, that a lot of us thought that it was a reasonable compromise, as has been pointed out.

It was balanced regionally. No one region in the country would bear it all. It anticipated and contemplated that the States would be involved in a siting characterization, and that the States would be provided an independent oversight capability and adequately funded to do so.

I became Governor of Nevada just two weeks after President Reagan signed that measure into law. I must tell you that our first experience—the ink was not yet dry on the signature making that

legislative bill a law when the Department of Energy refused to provide funding to the State to carry on the independent oversight.

We filed a lawsuit in the United States District Court and prevailed. Still no funding. We took the case to the Court of Appeals in the 9th Circuit. Still no funding. Finally, we had to come to the Congress to get that money released, and as Governor Miller indicated, we have an on-going problem.

The State's proposals in terms of the siting guidelines were totally ignored, and a unilateral decision in 1985, not based upon science, to abandon the second site. You may recall, those of you who were members of the House, that Congressman Markey's subcommittee conducted a hearing on this and determined that it was not science that caused that abandonment, but politics, and that was from the internal documents developed within the Department of Energy agency itself. So our experience has not been a happy one.

Finally, to bring this into a more recent perspective, Governor Miller pointed out that in 1989, shortly after he became Governor in 1989, the entire delegation met with Secretary Watkins. We were told that there would be a new day, that there would be a new spirit of cooperation, that we would have a working relationship that we could rely upon.

Admiral Watkins made a promise to each and every member of the delegation that day to support Nevada in getting funding for the independent oversight effort—that is the only agency that conducts oversight—funding independent of the contract money which the Department of Energy has available and which it parcels out. That did not happen.

Senator Reid and I had extensive discussions not on one occasion but on two occasions with Mr. Bartlett. Indeed, we even went so far as to get it in writing that Mr. Bartlett would be supportive of the State's effort to secure adequate funding for the oversight, and indeed, Mr. Bartlett responded that he thought the quality of research was excellent, that it was a constructive part of the scientific process, and I must say that when we called upon Mr. Bartlett to ask to protect that funding, Mr. Bartlett was nowhere to be found, and we feel, very frankly, that we were turned around on that.

Now, I do not think it is responsible for us to come before this committee and not offer a suggestion or an alternative, and Senator Reid and I have done so. We have the means available to do so through dry cask storage, on site. Those who accept the benefit ought to bear the burden is a philosophy which many of us have come to accept over the years.

That provides a 100-year interim solution. In 100 years, processing may become economically feasible, other new technologies. It avoids the hazards of transportation which we believe constitutes a regional bias against the State of Nevada because of our sparse population. We have no nuclear reactors in our own State, and we believe that this is the more prudent course of action.

Finally, if I might conclude by saying that many things have changed in the time since the original act was signed into law. the Nation has a new President, a new Secretary of Energy. Nevada has a new Governor. I am delighted that he is here today. Ratepayers have contributed nearly $6 billion to the nuclear waste fund, and they owe an additional $1.6 billion to the fund. Their annual

expense now exceeds $500 million per year, and nearly $3 billion have been spent on this program.

But one thing has not changed in those intervening years. Despite having spent $3 billion, the Nation is no closer today to having a nuclear waste dump than it was in the winter of 1983 when I first assumed office as Governor of the State of Nevada.

I thank you, Mr. Chairman.

[The prepared statement of Senator Bryan follows:]

PREPARED STATEMENT OF HON. RICHARD H. BRYAN, U.S. SENATOR FROM NEVADA

Mr. Chairman, and members of the committee: I appreciate the opportunity to appear before you with my colleagues from Nevada to express my views about the current status of the Nuclear Waste Policy Act of 1982, as amended. I believe this hearing represents an opportunity to reevaluate a national public policy experiment that has gone badly awry.

When President Reagan signed the Nuclear Waste Policy Act on January 7, 1983, less than a week after I became Nevada's Governor, our Nation embarked on a complex strategy to resolve a vexing technological problem—how to manage for hundreds of thousands of years the most toxic and dangerous waste products that man has ever created.

The premise of the 1982 Nuclear Waste Policy Act was to fairly and scientifically evaluate a variety of sites and different geological formations so that the best solution to the high level commercial radioactive waste disposal problem could be found. That act also contemplated a geographically balanced approach to insure that no single area of our country would be unfairly burdened with all of the waste products generated by the nuclear utilities. Such an approach would also minimize the transportation of these lethal materials over long distances and through communities never before touched by nuclear waste.

In the Nuclear Waste Policy Amendments Act of 1987, signed by President Reagan on December 22, 1987, a political decision was made to abandon the fairness and safety that was the premise of the 1982 act and to shift the national policy away from a scientific approach to solving our Nation's high level nuclear waste problem.

That legislation targeted only one site—Yucca Mountain, Nevada—for further consideration for a repository location.

Many things have changed in the time since the original act was signed into law. The Nation has a new President and a new Secretary of Energy. Nevada has a new Governor—and am pleased he is here in Washington with us this morning. Ratepayers have contributed nearly six billion dollars to the nuclear waste fund, and they owe an additional 1.6 billion dollars to the fund. Their annual expense now exceeds $500 million per year, and nearly three billion dollars have been spent on the program.

But one thing has not changed in those intervening years—despite having spent three billion dollars, the Nation is no closer today to having a nuclear waste dump than it was in the winter of 1983 when I took the Governor's Oath of Office.

The DOE and nuclear industry policy makers underestimated the resolve of Nevada's citizens to rise up against this inequity represented by the 1987 amendments. Even more fundamentally, the DOE and the special interests were blind to the merits of the State's technical arguments that Yucca Mountain was a bad choice for further study, and that the policy being pursued risked a high degree of uncertainty and insufficiency.

The execution of the Nuclear Waste Policy Act by the Department of Energy since 1983 has been a monumental public policy blunder. And now the administration, at the urging of Secretary Watkins, is preparing to compound that failure by again singling out Nevada, proposing an unprecedented extinction of Nevada's sovereign ability to protect the health and safety of its citizens, and continue a policy of nuclear waste management that has only a single likely outcome—failure.

The repository program has been paralyzed by management and scientific and legal deficiencies since the 1987 amendments were adopted. As a result, the target date for repository operations has slipped further with each passing year—first from 1998 to 2003, and now according to DOE's newest revised plan, no repository can open earlier than the year 2010.

As a result, utilities are having to face the reality of solving, at least on an interim basis, their own spent fuel storage needs. Yesterday, with Senator Reid, I intro-

duced legislation to help alleviate the burden on ratepayers that this situation represents. The Nuclear Regulatory Commission has issued a revision of its "waste confidence rule" which indicates that at-reactor spent fuel storage can be safely and effectively implemented for a period up to 100 years. Thus the crisis that prompted the 1982 act and its unrealistic deadlines—which DOE was unable to meet—has now vanished with necessary technological approaches gaining acceptance.

Unfortunately, existing law does not protect utility ratepayers from having to finance both the faltering federal effort and the interim storage that will be necessary because the Department of Energy will not be able to accept spent fuel for storage in 1998 as was promised in the original act. The legislation we introduced will provide needed relief to the nuclear utility ratepayers by correcting this inequity so that ratepayers only pay once for necessary waste management efforts.

This legislation allows a nuclear utility to retain a portion of its existing payments equal to the on site storage expenses incurred so that the ratepayers receive the waste management and disposal service for which they are already paying. Without such a provision, ratepayers will continue to pay billions for the existing program, and will also have to pay for interim fuel storage needed to allow for continued reactor operations.

The remaining fees paid will accrue in the dedicated Nuclear Waste Fund to finance final storage once DOE has licensed permanent disposal sites at some time In the future.

I would like to briefly state what I believe are existing flaws in this program:

1. DOE's credibility within Nevada has been damaged to the point it cannot be repaired. DOE officials lack the trust and confidence of Nevada's policy makers, and the Nevada public can never be convinced that DOE's technical studies can be conducted in a scientifically unbiased fashion.

2. Despite extensive data existing about DOE's and the State of Nevada's opinions about Yucca Mountain, no comprehensive and unbiased scientific review has occurred with might easily resolve the site suitability issues without further expenditure of time and ratepayer's money.

3. A waste management strategy that lacks flexibility and options is inherently unsound and is likely to fail.

4. Given Nevada's continuing opposition to the program, even if technical issues are resolved, public opposition will prevent successful implementation.

I firmly believe that any successful location of a permanent repository will only be accomplished through a cooperative and voluntary process, such as that being perused by David Leroy, the Nuclear Waste Negotiator. I believe his task is unnecessarily complicated by the continuing controversy engendered by the efforts of the federal government and the nuclear industry to force the repository on Nevada.

I suggest that to restore some rational public policy to resolving the issue of high level nuclear waste disposal, the Secretary should use his existing statutory authority to declare the Nevada site at Yucca Mountain unsuitable, and return this program to the realm of science.

If the negotiator is unable to locate voluntary host states for waste management purposes, the only viable option will be to utilize safe and effective interim storage on site while conducting a truly unbiased and scientifically sound research program into final disposal options.

The CHAIRMAN. Thank you very much Senator Bryan.

Next, the Honorable Barbara Vucanovich, Congresswoman from Nevada.

STATEMENT OF HON. BARBARA F. VUCANOVICH, U.S. REPRESENTATIVE FROM NEVADA

Mrs. VUCANOVICH. Thank you, Mr. Chairman, and I ask that my full statement be made part of the record. I will try to summarize.

I certainly do thank you for holding this hearing today. We think this is vitally important to all of our energy needs. Even if no more nuclear plants were to be constructed in this country, and that is a scenario that I doubt will occur, the safe disposal of spent fuel from existing facilities into a deep geologic repository poses difficult choices for the nation.

Nevadans know this as well as anyone, despite the fact that no high-level waste is generated within our borders.

Mr. Chairman, Nevadans have legitimate fears. They have every right to be skeptical. Even though the best scientific minds may be at work on Yucca Mountain, the pressure to open a repository somewhere within the next decade may not allow a no-go answer.

We need only recall the tragedy of the space shuttle Challenger's O-ring failure to be reminded of the consequences that a bureaucratic mind-set can have. No one listened to the engineers who were concerned about the effects of subfreezing temperatures upon the O-ring rubber. Basically, the decision to launch had already been made. Without alternatives, NASA was boxed in.

How will the Nuclear Regulatory Commission act when it is under the gun to decide licensing questions? There is a way to restore credibility to the site selection process, Mr. Chairman, and it is, of course, to reopen consideration of several alternatives: salt, basalt, and other crystalline rock types, as well as tufa at Yucca Mountain.

Because of Nevada's efforts, the administration is now seeking to strip the state of its authority to grant air and water quality permits under Federal and State laws. Nevada, we are told, cannot be trusted with the same authorities delegated under Federal environmental statutes to the other 49 states.

Our State has been dubbed an independent banana republic for exercising its sovereignty.

As mentioned by our Governor, the Nevada Division of Environment Protection has recently asked the DOE to refile its permit applications for the activities necessary to begin further site characterization at Yucca Mountain.

The administration's proposal in the National Energy Strategy Bill is a very heavy-handed and, I think, likely unconstitutional approach to getting the DOE on site. I am confident that neither the House nor the Senate will see fit to pass this "Roll Nevada Again" provision.

Not only Nevadans, but citizens all over the country can see when hardball politics is being played, and it will do nothing towards solving nuclear waste disposal problems.

Finally, Mr. Chairman, we can put our resources to the task and have legitimate, scientific inquiry, or the Congress can steamroll Nevada one more time and destroy what little confidence Americans still have in their Government's ability to safely dispose of nuclear waste.

I suggest the former, of course. I ask that my full statement to be part of the record, and thank you, Mr. Chairman.

[The prepared statement of Mrs. Vucanovich follows:]

PREPARED STATEMENT OF HON. BARBARA F. VUCANOVICH, U.S. REPRESENTATIVE FROM NEVADA

Mr. Chairman, thank you for holding this hearing today on an issue we all agree is vitally important to our energy needs—the management of high-level radioactive waste from nuclear power plants. Even if no more nuclear plants were to be constructed in this country, a scenario I doubt will occur, the safe disposal of spent fuel from existing facilities into a deep geologic repository poses difficult choices for the Nation. Nevadans know this as well as anyone despite the fact that no high-level waste is generated within our borders.

Since the passage of the amendments to the Nuclear Waste Policy Act during the budget reconciliation process in 1987 the Department of Energy has focused its attention solely on Yucca Mountain, Nevada, in my Congressional District. For over three years Nevadans have been very concerned, for without study of multiple candidate sites of various geologic settings it is difficult for us to believe that the decision to license a deep geologic repository at Yucca Mountain can be unbiased. It was for this reason that the State sued the DOE on issues concerning the Nevada Legislature's disapproval of the repository's siting and Congress' failure to override the State's veto.

When data gathered in site-characterization activities is measured against the standards and criteria used to reach a licensure decision, the fact that no other site is under consideration will weigh heavily in the minds of the final arbiters. Will the EPA be pressured to set less rigorous radionuclide migration standards? Will the models of expected seismicity and volcanism be adjusted during the study, perhaps even unconciously, to make a finding of suitability more likely? Will a decision be made to upgrade "engineered barriers" (storage canisters) to overcome geologic weaknesses in the site that another terrane might not need to have the same level of safety?

Mr. Chairman, these are legitimate fears. Nevadans have every right to be skeptical. Even though the best scientific minds may be at work on Yucca Mountain, the pressure to open a repository somewhere within the next decade may not allow a "no go" answer. We need only recall the tragedy of the spaceshuttle *Challenger's* O-ring failure to be reminded of the consequences that a bureaucratic mind-set can have. No one listened to the engineers who were concerned about the affects of sub-freezing temperatures upon the O-ring rubber. Basically, the decision to launch had already been made. Without alternatives NASA was boxed-in. Now will the Nuclear Regulatory Commission act when it is under the gun to decide licensure questions?

There is a way to restore credibility to the site selection process, Mr. Chairman. It is, of course, to reopen consideration of several alternatives—salt, basalt, and other crystalline rock types as well as the tuff at Yucca Mountain. Few would argue that the decision in 1987 to limit study to a Cenozoic-age volcanic rock stratum was done on scientific principles. No, political principles held that Nevada's four votes in the Congress could not overcome the majority, as indeed we could not. But the State has used every legal means since then to challenge the validity of this penny-wise but pound-foolish decision to save the Nuclear Waste Fund a few dollars at the expense of legitimate scientific inquiry.

Because of Nevada's efforts, the Administration is now seeking to strip the State of its authority to grant air and water quality permits under Federal and State laws. Nevada, we are told, cannot be trusted with the same authorities delegated under Federal environmental statutes to the other 49 states. Our state has been dubbed an "independent banana republic" for exercising its sovereignty.

Mr. Chairman, I'm sure that you are aware that the Nevada Division of Environmental Protection has recently asked the DOE to refile its permit applications for the activities necessary to begin further site characterization at Yucca Mountain. The Administration's proposal at Section 511 of the National Energy Strategy bill is a very heavy-handed (and I think likely unconstitutional) approach to getting the DOE on site. I am confident that neither the House nor the Senate will see fit to pass this "roll Nevada, again" provision.

Rather, Mr. Chairman, I believe that my colleagues on the Appropriations Committee of the House, and I am hopeful that you and your Members on the Senate Appropriations Subcommittee will agree, should instead increase the level of funding to the State of Nevada and affected local governments from the cuts being sought in the Fiscal Year 1992 DOE budget request. The appropriations cut sought by the Administration can only be characterized as a reprisal for Nevada's firm stand in the past. To lessen the ability of the State government, and our universities, counties, and cities to oversee the scientific data-gathering effort and to independently assess the impact of a repository, while at the same time seeking to put the Federal government in total control of environmental decision-making at Yucca Mountain, is exactly the wrong signal to send to the American public. Not only Nevadans, but citizens all over this country, can see when hardball politics is being played and it will do nothing toward solving nuclear waste disposal problems.

More than anything, we need to build the confidence of the public that a scientifically sound impartial decision will be reached. I have joined in the praise for Admiral Watkins' bona fide efforts in this regard for other program areas. The Secretary truly understands this point, I believe, but is stymied by those who seek only short-term funding relief. Mr. Chairman, we can put our resources to the task and have legitimate scientific inquiry, or the Congress can steamroll Nevada one more time

and destroy what little confidence Americans still have in their government's ability to safely dispose of nuclear waste. I suggest the former course.

The CHAIRMAN. Thank you very much, Mrs. Vucanovich.

Finally, we have the Honorable James Bilbray, Congressman from Nevada.

STATEMENT OF HON. JAMES H. BILBRAY, U.S. REPRESENTATIVE FROM NEVADA

Mr. BILBRAY. Thank you, Mr. Chairman. I appreciate the opportunity of coming before the committee. I also would ask that my full statement be made part of the record.

The CHAIRMAN. So ordered.

Mr. BILBRAY. So many of my colleagues here said so much that I would have said, and I do not need to repeat it to take your valuable time.

I would, for some of those who are new to the committee, and maybe even my colleague, Mr. Craig from Idaho, who I served with in the House, is a the fact of a little background that maybe even you have not heard as this bill progressed over to our side.

As the bill came over, the original "screw Nevada bill," and I am sure that there is another name for it over here, but as it arrived in the House of Representatives, I was called by a certain colleague of mine, a more senior Member, and assured that this bill would never see the light of day, that it was unconscionable what they were doing to Nevada, and that by designating one site, it was clear what they were trying to do, and it would never happen.

As we well know, it did happen. And not only did your bill designate one site, the House version actually designated Nevada as that site.

Secondly, I was told shortly before that, as I went in to make my fight and stand around and plead and cajole anyone I could get my hands on about this bill, by one senior Member, "Do you really think, with the present makeup of the leadership of the House in 1987, that Washington and Texas would really get the site?" I got the message loud and clear.

That was unfair if you talk about politics being involved at that point, when the ranking leadership of our House were from those two States.

It is hard for Nevadans to accept that the picking out of the three sites, Washington, Texas, and Nevada, that Nevada was picked because it surely was the best of the three sites. It certainly was a political decision.

And then, of course, as my colleagues have stated, when the eastern site was totally removed by pressure by eastern Senators and Congressmen to now avoid an eastern site completely, politics, again, was as usual. And politics have prevailed over a small State, one of the smallest in the union, which has 87 percent of its land presently used by the Federal Government.

Senator Wallop has stated how the people of Wyoming were concerned about the type of coal mining and the low sulphur coal mining in their State and their valleys and the environmental concerns. I think that if the people of Wyoming had to take the

burden that Nevada has taken over the last 50 years, I think they would be even more concerned.

They have a nuclear testing facility there that takes of hundreds of thousands of acres of ground. They have the Nellis Gunnery ranges, which are probably the largest gunnery ranges in the world for fighter training of aircraft that did so well, and much of it used for Operation Desert Storm.

You have Valance Center in Northern Nevada that takes up hundreds of thousands of acres of land, and they are asking for even more land withdrawal, presently, from the Federal Government.

You see a map of the State of Nevada and you show the Federal land and you show the part that is owned by even the State of Nevada and the private citizens, you see this huge black map with pins of white dots. Those white dots are what Nevadans and the State of Nevada own of our own State, and yet we are asked to continually have more and more.

As Senator Bryan said, and he talks about how we went to high school together, we were even Boy Scouts in the same Boy Scout patrol together.

I remember one day we were taken up to the top of a mountain in our patrol, and we stood up there, and we were given the honor of watching an atomic blast right outside the test site. We were told to turn around when the blast went off, and we watched this array of all sorts of colors in the sky, turned around, felt the heat from the blast come across us, and sang the National Anthem.

We look back at that today and wonder what will happen to us some day in the future. What kind of exposure we were made to have.

The CHAIRMAN. So that is what is wrong with Reid, huh?

[Laughter.]

Mr. BILBRAY. Now, Mr. Chairman, getting to the main point. You know, we are asked now to accept a nuclear repository in our State, as my colleagues have said, will last for 10,000 years, that we can sink below ground.

Many of us, as I said on the DOE Panel of the House Armed Services Committee, chaired by John Spratt, who I am sure you are familiar with, went out to Hanford and watched the decaying of that facility and the environmental, ecological problem that faces Hanford and the billions of dollars that must be spent to clean up that site that was supposed to be so safe when it was first put out there in the early 1940's and 1950's.

And then we see that this site here in this State, you know, people are telling us that yes, it can be safely stored below ground. But so many people have said it cannot.

When the NRC testifies, I think it would a nice question to ask about their senior geologist, John Trapp. His statements that it was a waste of Government money to even characterize the site at Yucca Mountain, that this site would never approved by the NRC in the future.

The fact that Mr. Szymanski who worked at the test site who was a whistle blower up there about the covering up of details about the Yucca Mountain site. And even lately, a quality analysis auditor at Holmes and Narver who was fired after he claimed that

he was not given access to the files of those people that were being hired to do the analysis up there.

And all of this thing has become public over the period of years. And when we had hearings about the gentleman fired from Holmes and Narver, we were told that the day after he was fired, that Secretary Watkins sent a notice out to the contractors that those kind of people should not be fired.

It did not do him much good because the order came a day after he was fired.

The fact is that so many of us are so concerned because we do not think it is politics on our end. We think it is good common sense for the people in Nevada to ask for the right that any other State would have: the right to go through the proper permitting. The Governor has stated.

We have lost our case in court that he had given a veto prior to the site being selected. The fact is that the State is now willing to go through with that permitting. But we do not want that taken away from the State.

We certainly want the Department of Energy, which has a long history throughout the sites of this country, whether it is Rocky Mountain or other sites, of certainly not enhancing its public trust by the way it conducts its business.

I do not think anyone in here can argue that because almost everywhere where they ran a site in this country, major mistakes have been made.

The Governor has given assurances. The State will give these permits if the Department of Energy does everything that they should do: cross the T's, dot the I's, and make those applications proper.

I do not think this Federal Congress should now step in and preempt the State from exercising its constitutional rights.

Just as the Articles of Confederation were thrown apart back in 1789, I think the Federal Constitution also provides those rights to our States. Our State has the power to govern ourselves in any powers not specifically enumerated to the Federal Government.

This is an area that should not be given to the Federal Government. We should have the right to protect our citizens and the future life of future Nevadans and also people from Idaho and Utah and Wyoming.

If there is ever a problem with that nuclear repository and one of those sites does erupt, and if there is volcanic activity there, and you can stand on the top of Yucca Mountain and look down, you can see volcanic cones all around that site.

When I was first out there, they said, that is 300,000 years old. The next time I came up there they said it was 30,000 years old. Now they say that well, those cones, some of them were within the last 10,000 years they erupted. Every time you go up there, it is shortened up. Depending upon which geologist you talk to, it may have been just a few thousand years ago that they exploded.

We have seen Mount St. Helens. We see what has happened in the West. You are told that Mammoth, which is not too far away from this site, is a potential—volcanic activity could erupt there at any time.

What if you did have a small volcanic eruption right below one of those canisters, and that is thrown into the air? The prevailing winds, which way do they go? Mostly, Senator Wallop, toward your State and toward Utah. And they also roll around at periods of the years, and we have those Santa Ana winds where they blow out and go towards San Francisco and Los Angeles.

You are talking about the risk of millions and millions of lives to radioactive material being spread into the air. I will tell you, this is a serious, serious thing we are doing.

I think the suggestions of Senators Reid and Bryan, that above-ground storage is the solution to the future and one that we can work with. I think this is what we should be looking at.

I ask this committee to consider, before you take away the rights of a State to do its own permitting and to permit this type of activity, and to make sure the Government does it right, you think about the future of your own State.

If the salt domes of Louisiana are eventually found to be the right sight, and I think that is probably where they should be——

[Laughter.]

Mr. BILBRAY [continuing]. You know, Senator Johnston is going to want that same right for his State to protect itself.

And Senator Wallop and Senator Craig, all of you would feel the same way. I ask something that is often not done in this Congress, but that fairness prevail, and the right thing be done.

Thank you.

[The prepared statement of Mr. Bilbray follows:]

PREPARED STATEMENT OF HON. JAMES H. BILBRAY, U.S. REPRESENTATIVE FROM NEVADA

Good morning, Chairman Johnson. I am here to testify before the committee because I am most concerned about the intention of the administration and this committee to begin the process to create legislation that would strip the State of Nevada of its constitutional rights and its ultimate responsibility for the permitting of a geologic repository at Yucca Mountain.

Before the DOE proceeds with their study of Yucca Mountain, as the first permanent high level nuclear waste repository, there are a number of important and very basic considerations that need to be addressed. First of all the EPA has failed to produce the regulations stipulating stringent standards that would guide the NRC's implementation of the HLW disposal regulations.

In the establishment of these EPA regulations rests the inherent difficulty associated with risk assessment analysis. Although risk assessment has been exercised by man since the beginning of human cognition, accurate and precise risk assessment remains an impossible goal. The process of assessing risk is a human one, limited by human observation and measurement and ultimately dependent on the dynamic values people assign to health and safety. Despite the efficacy and merits associated with probabilistic standards, mathematical models do not reflect reality. They represent approximate relationships at best.

I am here as an advocate of the citizens of Nevada and the greater region which would be adversely affected by the uncertainties and severe risks to human and ecological health by the presence of a HLW repository at the Yucca Mt. site. Based on my understanding of the virtues and weaknesses of quantitative risk assessment, the long time period involved in this project (10,000 years) coupled with the uncertainty associated with high level nuclear materials, render the best methodology ineffectual. Leakage occurs in the most herculean of storage facilities.

Feeling the potential cost to human and ecological health to be too great, I prefer to err on the side of conservative assumptions rather than be assured by probabilistic standards. In short the risks which the federal government ID requesting the people of Nevada to take are unacceptable risks. Neither the DOE nor the nuclear industry has been able to establish a credible track record in their management of nuclear materials. Promises have been made before based on other, previous as-

sumptions about the soundness of past disposal practices and maintenance capabilities at reprocessing facilities. Time and again, these assumptions have been proven incorrect.

When discussing how to establish risk-based priorities, William Reilley has said, "the time has come to start taking aim before we open fire." In short, we have to find a better way of setting environmental priorities. Sound science can help establish how we set our priorities and allocate resources based on risk, to the extent that statutory mandates allow, but it is public values, public perceptions, and economic constraints that must shape our priorities.

We must refocus our attention and resources and begin to seek solutions which emphasize the greatest potential for risk reduction. We must be willing to move in a direction that affords our society the opportunity to grasp realistic choices. As we continue to pursue an industrially, economically developed society, we must maintain our commitment to an ethic of environmental stewardship consistent with the goal of bequeathing a healthy planet to the future generations.

The CHAIRMAN. Thank you very much, Congressman.

I wanted to thank this panel for very articulate testimony. I do not necessarily agree with every conclusion, but the testimony was very, very well delivered.

I think, perhaps, a little history is in order. I personally have been working on nuclear waste, I guess, some 15 years. This is my 19th year on the committee. We have studied it in this committee for over a decade.

Indeed, back in 1980, in the 96th Congress, I introduced legislation, which actually passed the Senate, calling for monitored retrievable storage. It did not include a geologic repository, and the reason that I put monitored retrievable storage was because I thought it was perfectly safe.

We have heard reams and reams of testimony by the greatest experts in the world. We have been to foreign countries to see how they have done their programs, and we were perfectly convinced that there is no scientific or danger problem with nuclear waste, that it can be very well stored in monitored retrievable storage, just as it can in a repository.

But as I said at the time, the better solution is monitored retrievable storage because of the political problems in will inhere in trying to do exactly what is happening here, that is, an intense—intense—political and emotional problem.

That is the reason I proposed monitored retrievable storage and we passed that in the Senate. When we talked about it with the House, the environmental community, interestingly, as well as Members of the House of Representatives, said, oh, no. You have got to have this repository, a deep repository that would be down deep out of the way so people will feel safe.

So, we then came up with a dual track in the next Congress, which became the Nuclear Waste Policy Act, which provides for a deep repository as well as monitored retrievable storage. It was to be a parallel track.

Initially, it was to be two repositories and a monitored retrievable storage facility. We passed that legislation, and you will remember that the original legislation called for us to select nine sites first and then go down to five and then to three and then one.

Then we proceeded to winnow out those other sites and finally got down to three sites. At that point, we received testimony here that characterization would take over a billion dollars per site,

which was totally different from what the experts had told us the cost would be at the time we passed the legislation.

Two additional sites would cost an additional $3.8 billion. Now, that's why, I, along with Senator McClure, proposed that we go from three sites to one site.

Our legislation did not pick Nevada, rather it called on the experts to make the choice of site. In this process, we would save $3.8 billion provided that first site which was picked for characterization would be the appropriate site. Otherwise, we would have to do them in sequence. If the Nevada site was the first tested and that turned out not to be suitable, then you would have to move to a second site.

We passed our legislation in the Senate in just that way. When we got to the House, indeed on a political basis, they said, nominate Nevada. Now, there was, to be sure, a world of scientific opinion on the suitability of these sites.

The overwhelming mass of evidence was that Nevada was the better site, based upon what they could learn from the surface and from such little holes that they had drilled in the ground. But nobody thought or suggested at the time that you would be able to rule a site in or out without characterization, which, as you know, is the drilling of a huge exploratory shaft facility and conducting the testing.

In any event, the selection of the Nevada site was forced on us by the House. We agreed to that in conference. And by the way, in our original legislation, I put in $100 million per year for the site that was initially selected.

I was about the only one who was for that provision. They wanted to reject it altogether in the House, but I was able to hang on to $20 million per year, which is pretty serious money, Governor. And that survived in the legislation.

I am not running for office in Nevada, and do not expect to, but at the same time, I do not quite deserve to be painted the ogre of this so-called "Screw Nevada" bill. First of all, I wanted monitored retrievable storage; secondly, I did not pick Nevada, and third, I wanted to give Nevada a lot more money. And the money they will get, $20 million a year, is serious, serious money.

So, if the $20 million is finally forced on you, just remember, thank your good friend Bennett.

[Laughter.]

The CHAIRMAN. That said, we have now run through the congressional process. It is now the law of the land, the Nuclear Waste Policy Act as amended, and it is my responsibility, and Senator Wallop's responsibility and others to make it work.

So, I am therefore required to ask you this question.

Senator BRYAN. Mr. Chairman, could I excuse myself? I have got to preside at a subcommittee hearing at 10:30. I do not mean to be rude.

The CHAIRMAN. You certainly may.

Senator REID. You see what happens when the tough questions come?

Senator BRYAN. I used to be Governor.

The CHAIRMAN. I understand about having to preside.

In January of 1990, Nevada filed a brief with the 9th Circuit in which it was stated, among other things, as follows and I quote: "It should be obvious that the State will likely exercise every power in every aspect of its inherent jurisdiction to frustrate the Federal program."

That statement was made on behalf of Nevada, and I assume on behalf of you, Governor, and so my question is, have you changed your mind?

Governor MILLER. I think, Senator, you have to put the entirety into perspective and that is, what are the rights of the State of Nevada, and should those rights be subrogated or eliminated in the Federal effort to reach a solution to this problem?

The CHAIRMAN. It does not say "solution." It says "to frustrate the Federal program."

Governor MILLER. Well, I did not choose that particular language. That was chosen by the former Attorney General, but I am also not going to deny that the Nevada will, in fact, as I have indicated, utilize whatever legal rights are available to us to review the process and to establish whatever restrictions thereto might be occasioned by our analysis of what laws are available to us.

The CHAIRMAN. Let me put it in another way and use your words from December 27, 1989:

"In fact they, DOE, gave us an ultimatum. You have 30 days to be good little boys or girls. I indicated to them at the time, as I do now, you can wait 30 days or 30 months or 30 years. We are not going to capitulate."

You have not changed your mind on that one?

Governor MILLER. Absolutely not.

The CHAIRMAN. Okay. Here is another one. This is from 1990:

"There is no question that this process will be tied up in the court for years. Your generation"—you were speaking to teenagers—"will inherit this battle. You must maintain a constant watch."

Same thing?

Governor MILLER. First let me commend you on your ability to follow me around for these speeches.

[Laughter.]

The CHAIRMAN. We hang on every word, Governor.

Governor MILLER. If only my constituents were there at the same time.

[Laughter.]

Governor MILLER. The fact of the matter is, Senator, it all underlines our principle and our belief, as was stated by myself, our entire congressional delegation, and I am sure, our legislators if they had spoken on this issue, and that is that we are not confident in the process. We do not believe in its objectivity. We have some serious concerns as to the manner in which it has been handled to date.

The modification of the original bill, which eliminated the second site, which later eliminated other comparable sites, in other words, selecting from amongst those best, on full scientific studies, as opposed to arbitrarily deciding that Nevada was the only site to be selected, we believe that the process to date has ignored the scientific evidence that would dispute this as a suitable site.

There has been some billion dollars spent to date which we think has, at least from our perspective, generated enough scientific evidence to indicate that this is not the site. The Chairman: Let me interrupt, and I do not mean to interrupt, but I just want to establish this. And look, if I were Governor of Nevada, and I do not think I will be able to either run or get elected, but if I were, I think I would probably be doing exactly what you are doing.

I just want to establish your position, and I think I have got quotations here. Here is one from your director of your Nevada office, Bob Loux: "No way they will turn dirt in January 1991. It is another 6 or 8 years before they ever get access."

Here is Mr. Loux, this is 1991: "The longer we can hold the Department of Energy off, the more questions are raised on whether this is a good site."

Here is your press secretary: "Nevada will fight the process every step of the way."

Let me put all of these in the record. There is no need to repeat them. Understand that I would probably do the same thing, but it is fair to say that you will do what you have said. You have not changed your mind; is that fair?

[The statements of Nevada's position on nuclear waste referred to by the Chairman follow:]

January 1990—Nevada's brief filed in the Ninth Circuit

"It should be obvious that the State will likely exercise every power and every aspect of its inherent jurisdiction to frustrate the federal program."

December 18, 1987—then-Governor Bryan

"We will continue to vigorously fight the decision on scientific, technical and legal grounds in the courts and through whatever avenues are necessary to right this injustice."

November 2, 1989—then-Attorney General Brian McKay

"Nevada has the legal right to reject the federal government's proposal for a high-level nuclear waste dump at Yucca Mountain."

November 15, 1989—Governor Miller

"I cannot permit Nevada's rights as a state to be so abridged without exhausting every available challenge."

December 27, 1989—Governor Miller

"In fact, they (DOE) gave us an ultimatum: 'You have 30 days to be good little boys or girls.' I indicated to them at the time, as I do now, you can wait 30 days or 30 months or 30 years. We're not going to capitulate."

January 26, 1990—Governor Miller

"There is no question that this process will be tied up in the court system for years. Your generation (speaking to teenagers) will inherit this battle. You must maintain a constant watch."

August 20, 1990—Steve Frishman, staff

"Naturally, we're not sitting here waiting to get hit with a bat. The state policy is we're going to wear this thing down and knock it out."

September 20, 1990—Governor Miller

"We're disappointed (in the Ninth Circuit decision) but that is not going to deter our firm resolve from keeping the federal government from using the state of Nevada as a nuclear guinea pig."

September 20, 1990—Joint Congressional Delegation

"It's outrageous that Nevada's right to block DOE has been rejected by the Ninth Circuit. However, there are still other legal arguments and lawsuits pending. We have continuously repeated our vehement objections to targeting Nevada as a site for the proposed nuclear waste dump. Our state has the right to refuse to take this

radioactive waste. There is no point in continuing site characterization when a nuclear waste dump is unacceptable."

September 26, 1990—Governor Miller

"We will not be deterred from our resolve to keep Nevada from becoming the nation's nuclear dumping ground."

October 28, 1990—Governor Miller

"Delay is our ally, not our adversary. We're determined to keep kicking, scratching and clawing for our own survival."

October 28, 1990—Bob Loux, director of Nevada office

"No way they will turn dirt in January, (1991). It's another six or eight years before they ever get access."

November 16, 1990—Larry Henry, Miller press secretary

"Nevada will fight the process every step of the way."

December 19, 1990—Governor Miller

"We may not bring this train to a halt, but we're certainly stopping it from picking up speed along the way. I think it's important that we try everything in the process to keep from being railroaded."

December 31, 1990—Bob Loux

"There are numerous tools available to the state to bring further challenges, there's a number of other constitutional issues yet unresolved that we may end up looking at should the current effort be unsuccessful."

February 26, 1991—Bob Loux

"The longer we can hold the Department of Energy off, the more questions are raised on whether this is a good site."

March 5, 1991—Harry Swainston, Deputy Attorney General

The Supreme Court's refusal to hear the case "is not the end of ball game. That's not to say there won't be other interesting issues. It's relatively certain there will."

March 5, 1991—Governor Miller

"I, along with the Congressional delegation, will continue to resist federal efforts to place a high-level nuclear waste dump in Nevada."

Governor MILLER. It is fair to say that we object to the process. It is also fair to say that we will comply with the orders of the court, that is, to begin the review of the permits. They will not be hindered in their review. They will also not be accelerated in their review.

They will be reviewed objectively, and we will make a determination based thereupon.

But it is also fair to say that we in the State of Nevada believe that this has been a political process to date, and that the safety and well-being of the people of the State of Nevada are being subjugated to a national policy whose concern is only the storage of the nuclear waste without regard to the scientific concerns.

As I was going to say earlier, we base that not only on our own scientific findings, but on several others.

The CHAIRMAN. I understand that. I understand what your position is and understand it completely. But I think to be candid with the committee, all these statements really mean what they say; do they not?

I mean, you have not changed your view?

Governor MILLER. There is no question that we will exercise whatever legal authorities are available to us to review this and to implement standards that we feel would be fairer to the State of Nevada and fairer to the country.

The CHAIRMAN. I understand. Okay, now, if you were in my place, and you had this dirty job of being chairman of this committee and you had to make this law work, and you read all of these statements: "Nevada will fight the process every step of the way;" "the longer we hold off, the better chance we have of having questions raised about the site;" "another 6 or 8 years before they get access;" "there is no point of continuing the site characterization when a nuclear waste dump is unacceptable;" "your generation will inherit this battle."

If you were I, would you not think that something has got tc be done to make the process work?

Governor MILLER. I would definitely agree with that, Senator. I think what should be done is that we should go back to the basic premise upon which the Nuclear Waste Policy Act was enacted, which provided for multiple site review, which provided for more than one location, and which process does not lend itself to characterization as the "Screw Nevada" legislation.

I think that the people of the State of Nevada cannot be expected to consider that this is an objective proposal in light of the review that we have made, in light of statements like 16 scientists from the U.S. Geological Survey who said, and I quote, in a memorandum on August the 17th, 1988: "The DOE has attempted to prevent the discovery of problems that would doom the repository."

The CHAIRMAN. Now, Governor, we both know that you cannot find out whether this is an acceptable site until you characterize it. Characterizing the site is not building the site. That is getting the information on which to decide.

Now, it has been the view of the State of Nevada, and your repeatedly stated view, that you did not want the site characterized, that you wanted to hold it off as long as possible.

Now, first of all, why do you want to hold off characterization?

Governor MILLER. I believe I have already answered part of that, but I will repeat. The fact is that we are not confident that this is an objective or scientific process. To date, there has been $1 billion spent on the project. We believe that there is scientific data that should exclude the State of Nevada that has been ignored.

The Congressman mentioned some of those scientific statements by Mr. Szymanski and others. I mentioned some just a minute ago by the U.S. Geological Survey. We believe that this project has a financial interest which overrides the safety concerns of the State of Nevada.

The DOE's own estimation of $3 billion to $4 billion that is spent to be characterization of the site alone, will be the driving force in the program being aimed at engineering Yucca Mountain as the repository, regardless of its characteristics.

The CHAIRMAN. Let me ask you one final question.

Senator REID. Mr. Chairman, if I can, I would just hate to let this go by without giving what I feel is a valid opinion.

When you say, what should be done? And perhaps Governor Miller and does not have a Washington perspective—and that is a plus, I think. I think this committee should proceed to do what was established before the Nuclear Regulation Subcommittee of the Committee on Environment and Public Works to look at dry cask

storage. Leave it on site. We have been told by experts from all over the country, scientists, that you could leave it on site.

And secondly, I think the committee should proceed hastily to establish a monitored retrievable storage facility and let Nevada do what it has to do to make sure the process is fair.

There is no one that has said the process is not going forward. The people who object do not like the speed that it is going forward. They want it to move quicker.

The CHAIRMAN. Well, I say it is not going forward.

Mr. BILBRAY. Mr. Chairman, may I say something on that, too? I think it is very important. You asked what we should do. First of all, we should let the process move forward just like it is. Again, we just lost the suit in the Supreme Court that said we did not have the veto prior to the site being characterized and selected.

Now, the process is now moving forward again. Like Senator Reid said, it may not be going as fast as you want it to, but it has not broken, the system.

The CHAIRMAN. Do you think Governor Miller was right when he was speaking to the teenagers when he says, "There is no question that this process will be tied up in the court system for years. Your generation," speaking to teenagers, "will inherit this battle"?

Mr. BILBRAY. Well I think it is true because I think even after the process has gone forward and if the site is selected, I think you are going to see every environmental group in the country filing lawsuits to tie it up like you do any of the nuclear facilities around this country.

I think if you even get it built, for the next 30 years after that, you are going to see litigation going on from every environmental group in this country.

The CHAIRMAN. I think you are already seeing that.

Mr. BILBRAY. They are waiting. They are waiting until we exhaust our remedies before they come down. I think that, to what Senator Reid is saying, is very realistic. Get the MRS built and if it takes 100 years to characterize this site, you know, that is fine because you have an MRS in place.

But, Senator, may I ask you a question? I know this is not the trend. But, Senator, do we have your assurances that if you pass this bill out that you will let it come over and take the normal course through the House side and will not be attached to some appropriations bill that we cannot do anything about?

The CHAIRMAN. Well, first of all I have not introduced this bill. This is the administration request. Senator Wallop and I have a piece of legislation which does not include preemption of Nevada, but the Secretary of Energy has requested one.

And one of the reasons to hold this hearing today is to find out whether the Secretary is right, he will be here to testify in a few moments, when he says it is necessary to do, otherwise Nevada would try to frustrate the process.

I do not know, we have not even introduced the bill. I cannot say what kind of bill it would be if introduced or whether it is necessary. I am beginning to hear that Nevada is not very enthusiastic about this program or about issuing permits to make it work.

Mr. BILBRAY. No, I think the chairman knew that all along. But what I am saying is basically that what we would like is the oppor-

tunity on the other side. The chairman is a very shrewd Senator and can get things through very well. What I would like, at least my House colleagues and I, would very much like the opportunity to be able to at least fight the battle on our side. And hopefully, in fairness, the Senator will not attach this to some bill, as we close down at the end of this session, that we cannot veto or we cannot vote against or will fly through the House, and in fairness give us at least a chance to fight it on our side.

The CHAIRMAN. If we should decide it is necessary and, indeed, should introduce a piece of legislation, you can be sure it will not pass unless it is strictly in accordance with the rules.

[Laughter]

Mr. BILBRAY. That makes me very secure.

The CHAIRMAN. And remember it was the House that picked Nevada, it was not your friend, Bennett.

Let me just ask one final question, Governor, and this has been always a mystery to me. You know you got the Nevada test site out there and you have got these big explosions that take place underground. They are not sealed off from the earth around them. They leave strontium 90 and cesium 137 and plutonium 239 and things that last for tens of thousands of years. And Nevada says, atta boy, Department of Energy, give us more. They are great for jobs and they are wonderful.

And all this I hear about these volcanoes getting ready to erupt and put all these things in the air with these tumbling winds and millions of people being killed, why is that not so with the Nevada test site which Nevada wants? And why is it more dangerous that a highly engineered proposal, which all the scientists say is perfectly safe and that contains these containers and all that, why is one good and the other one not?

Governor MILLER. Let me first answer your other question on the congressional Representatives' attitude. When speaking to teenagers and talking about this becoming their problem, you are only talking about a decade or 10 years until teenagers are, in fact, adults or even less. There are many issues still to be left on the table with this particular proposal.

We are, at this stage, considering whether or not environmental permits should be granted. Even if they are granted, it is going to take some years before the process evolves to the decision from the Department of Energy as to whether or not this is an acceptable site.

There are already scientific disputations of the acceptability, which I envision will be legally contested in years to come. That has to go in front of, as you are well aware of, the Nuclear Regulatory Commission and the Congress. I think, under any proposal, if we were to fall over and lay down and play dead for you, there would still be a decade's worth of delays before this was ever resolved, at a minimum. And I expect it will be even longer than that.

I stand by that statement. But I think it should have the explanation that it should not be limited to the question of the present environmental study. I am talking about the entire process when I make it.

The Nevada test site, which has been present for many years is in restricted areas and the scientific studies that we have seen to date would indicate to the contrary that it does not provide that type of a hazard to the people of the State of Nevada.

First of all, the repository is to be there for at least, at least the product, for 10,000 years. We are talking about 70,000 metric tons. We are talking about transportation of all of that throughout the United States, which I think many of your States should be a little more concerned about than you are because this will all be traverse for the most part in any case, from the Eastern United States out to Nevada by truck. And all too frequent are truck accidents which imperil not only the citizens of the State of Nevada, but also citizens of the rest of the country.

And for all of those reasons, we feel that this should not be acceptable to us.

The CHAIRMAN. Governor, thank you very much.

Senator Wallop.

Senator WALLOP. Thank you, Mr. Chairman.

Governor, if, as you and your congressional delegation have said, there is ample scientific reason to believe that this site will not stand the scientific scrutiny that it is about to receive, why not let it go forward and be done with it?

Governor MILLER. Well, first of all, Senator, I think, as I stated a few moments ago, is the fact that we do not believe the process has been fair and objective. At every turn the process has been modified to, in effect, screw Nevada. I have stated several of the bases upon which those modifications occurred. You are well aware of them, the elimination of second site, the fact that there is only one site being considered, the financial interests that are involved in that.

There is the other, and that was brought up by Senator Bryan and, I believe, by other representatives here, and that is that our ability to provide an independent oversight has been restricted from us by the lack of appropriations that were originally, at least in theory, promised to us by the Congress, and that support thereof which was promised to us directly by the Secretary, which was not forthcoming.

We believe that the process is fatally flawed and that it should not proceed, even if there is a billion invested in it right now. And there are many scientists that indicate that this is not a suitable site. But more importantly, we believe that it is not an objective study.

Senator WALLOP. You have testified to the fact and Congressman Bilbray said the same thing, that as soon as your avenues of frustration have been exhausted that the environmental community will go in and do it.

It strikes me that no State has the right to frustrate the national will. The State has every right to protect its people. But that is not the way you have characterized what your effort has been. You have characterized it as frustrating. You said that it will, as stated in its brief before the Ninth Circuit Court of Appeals that Nevada, "will likely exercise every power and every aspect of its inherent jurisdiction to frustrate the Federal program."

Now that is not to protect the people of Nevada, that is to frustrate the will of the nation.

Governor MILLER. I would respectfully, Senator, disagree with you because I believe that our motivation is to protect the people of the State of Nevada, just as your motivation would be to protect the people in the State of Wyoming if this was designed to come to the State of Wyoming. And if you had been subjected to a process modifications, which limited all site selection to Wyoming, which gave economic considerations which were then withheld, at least for your oversight, if there had been a modification of process to eliminate all the others.

Our basic purpose, and the fact that we are unified, bipartisanly and in all branches of Government in the State of Nevada is the fact that we are concerned for the safety of the people of the State of Nevada. And I honestly am offended by the fact that you would suggest otherwise.

Senator WALLOP. I am using your words, Governor. I am not characterizing them. They are the words that you chose, that you want to frustrate.

Governor MILLER. You added the second part to that, which is not in my statement, which is that I am not seeking to protect the health and safety of the State of Nevada. I said that we will use our legal process to try and thwart this, or as the attorney general characterized it, frustrate it. But I did not say that that was my primary purpose. My underlying purpose is to protect the people in the State of Nevada. That was not in my remarks.

Senator WALLOP. How can you protect the people in the State of Nevada if you will not allow the scientific process to go forward that would give you the information with which you could protect them?

Governor MILLER. Senator, if someone who you were not trusting of suggested that you take poison, would you readily accept it or would you question it and try and frustrate that process?

Mr. BILBRAY. Senator, may I say something in that regard? I think basically the big issue that we would continue to say and the State can tell you is the fact that we want to make sure, as these tests go forward and as the permitting, if it is accepted, will be fair and that there is adequate funding given to us.

But every time we seem to protest and every time we seem to object to anything that goes on, the threat—it is the carrot and the stick, the carrot is pulled away and the funding is cut back. We are not going to give you this much money this year because you are not cooperating. If you will cooperate, we will give you more.

It is like in a lawsuit, I mean, you still have to do everything you have to do.

Senator WALLOP. Congressman Bilbray, there is no reason to give you any money to conduct an independent review of a process that is not going anywhere and which you will not allow to proceed. If the process was going, then you would have a case. But if there is no process underway——

Governor MILLER. Then you will withdraw the DOE funds. It is the same time frame that they are being withdrawn from us. I mean, if the DOE is going to proceed with Federal funding to review it to that status, and you say that there is no process to

date, then perhaps they should not be given that level of funding that has been diminished as well.

The CHAIRMAN. Has that been cut back as well?

Mr. BILBRAY. Not to the extent.

Senator REID. Chairman Johnston, it is not directly in answer to Senator Wallop's question, but I feel it is appropriate to respond to a question that you asked Governor Miller.

I, like the two of you, the three of you, am a great supporter of nuclear testing for our country. It is part of what has maintained the security and the safety of our nuclear weaponry. So we do not need to debate the necessity of the nuclear test facility in the State of Nevada.

But to compare it to the nuclear repository, in all due respect, is not logical. Let me just explain that the nuclear test facility in Nevada, the weapons are set off underground. They are very closely monitored. Even if you take one of the shots that hit Nagasaki and Hiroshima, people are now living there above the ground.

We have, at the nuclear repository that is being suggested in the State of Nevada, it would be equal to about three million bombs, the stuff being stored there. It is in a concentrated facility that is subject to earthquake and volcano, according to scientists. The two are not compatible. And I should not say compatible, but comparable.

Even the Department of Defense stated that it would interfere with what is going on at the Nevada test site to have the repository where it is.

The CHAIRMAN. Senator Reid, I beg to differ with you. I think they both contain very long-lived nuclear waste. I think the repository, while it contains more waste—I mean, if there is leakage into the biosphere, it does not take a lot. That is one reason that Nevada is so upset about it.

So it is not that you have to have the equivalent of 20,000 bombs or whatever that figure was that you used, if you just had one bomb and it leaked into the atmosphere, the amount of nuclear waste from that would be difficult. The question is whether you can contain it.

And the scientists tell us that with a repository, you have multiple walls of protection. You have not only the engineered facility, if we can ever characterize it and find out whether it is geologically safe. They would be able to prove that that was geologically safe, just as they proved that for the Nevada test site.

And, secondly, you have the engineering part of the repository, the walls themselves of the facility, as well as the casks in which the waste are put. So I think they are very much comparable. There are just more of them. You have multiple places where the shots were fired.

There are differences, but it is the same principle. The fact is that there is an emotional response to one and not an emotional response to the other.

Senator REID. Chairman Johnston, also assuming your statement for purposes of this discussion, which I do not, but let us assume that we do. We also have an additional problem. And that is how are you going to get it to the repository? One thing this discussion

here today has not touched upon in any depth whatsoever is the transportation of these thousands of tons of nuclear waste.

And as what brought up before Senator Graham's Subcommittee on Environment and Public Works, if these solid casks that we are talking about carrying them to Nevada from all over this country are so safe, why not leave them there in the first place in the casks?

The CHAIRMAN. We went into that question in this committee, the Congress did. And it is the law of the land that we not do that. We debated that for 4 years in the Congress and we passed a law. It could be done with a monitored retrievable storage. I proposed at one time an interim on-site storage. That was rejected by the Congress.

Now if you think you can pass that legislation for monitored retrievable storage, have at it. But the Congress has acted and has spent billions of dollars and that is the law. That is the simple answer to that.

Senator REID. Mr. Chairman, to indicate that, and this was the real concern that I have with Admiral Watkins who is a scientist, he has a distinguished military career, and the first meeting that we had with him, I was so impressed I said nice things about him in the press which I have since come to regret. And I say that seriously because he gave us the impression that he was going to approach this as a scientist.

And that is what I said in my statement, if Admiral Watkins is approaching this as the scientist that he is, I think it is incumbent upon him and perhaps this committee to say the process is not working. And we should take another look at whether it can be stored——

Senator WALLOP. I think it is clear the process is not working, but it is not on the scientific basis. It is on the basis of legal frustrations which have been clearly characterized by your Governor.

Senator REID. But we cannot approach this on the basis of, we are going to show Nevada we can do this. Maybe Nevada is right. Maybe solid cask storage, dry cask storage should be an alternative. Maybe MRS should be an alternative.

Let me say one other thing why the State of Nevada is concerned, why Governor Miller is concerned, and all the rest of us. I offered an amendment in the famous "screw Nevada" bill. That amendment said that the first priority of the Department of Energy relating to the nuclear waste repository should be health and safety. That amendment was defeated because of the not in my backyard syndrome.

The Congress of the United States said that public health and safety should not be the number one priority of the Department of Energy in siting a repository in the State of Nevada.

How do you think the people in the State of Nevada feel?

Governor MILLER. Can I add, Senator, just answer the one question there.

The CHAIRMAN. Let me recognize Senator Craig because we have another three witnesses, including Admiral Watkins, whom we have to get off before noon.

Senator Craig.

Senator CRAIG. Mr. Chairman, I have one question only. And this if for you, Governor. We have heard a great concern about the inability of the State of Nevada to effectively monitor the procedures that would go at Yucca Mountain and a scientific siting process. If you were adequately funded by your own definition, by the Congress of the United States through appropriation and then, obviously our Government, would it change your rhetoric or would it change your attitude?

Governor MILLER. First let me say, Senator, in response to the previous questions and which is implicit in yours that the fact is that Nevada has not delayed this process any more than 2 months even though we have exercised our legal right.

Senator CRAIG. Governor, let me accept that premise. Answer my question, if you would, please.

Governor MILLER. I do not believe that that fact alone would make Nevada roll over, if that is what your suggesting. We still have some concerns.

Senator CRAIG. I am not asking that. I am asking, would you allow the process of siting to go forward if you were to be allowed by Federal monies to adequately monitor, and you would be able to define adequately, all of the processes that went forward and to make an independent analysis of the scientific validity or lack of, of that siting process?

Governor MILLER. If all of the remarks that you are making were ones that we could be assured of, we would be more comfortable with the process than it has evolved to date. But we would still reserve the right to exercise our own lawful rights as a State to not be subjected to——

Senator CRAIG. No. I do not think I used the word reserve your lawful rights. I said, would it change your rhetoric?

Governor MILLER. Well, it certainly would eliminate that portion of it.

Senator CRAIG. Thank you.

The CHAIRMAN. Governor, I understand you are on the way out to watch UNLV play basketball. I want to wish you good luck. UNLV is, I am sure you would say, the best in the country. We are proud of them because they are so good. So good luck to you.

Thank you all very much for testifying before us.

Mr. BILBRAY. I just wish we could win here like they do on the basketball court.

The CHAIRMAN. Next, we are pleased to have the outstanding Secretary of Energy, Admiral James D. Watkins.

Admiral, welcome back to the committee.

STATEMENT OF HON. JAMES D. WATKINS, SECRETARY, DEPARTMENT OF ENERGY, ACCOMPANIED BY JOHN BARTLETT, OFFICE OF RADIOACTIVE WASTE MANAGEMENT; AND STEPHEN WAKEFIELD, COUNSEL

Secretary WATKINS. Thank you, Mr. Chairman. I appreciate the opportunity, Mr. Chairman, to testify before you today on this important subject.

I have submitted a more lengthy formal statement for the record, which I would like to have entered.

The CHAIRMAN. It will be placed in the record.

Secretary WATKINS. I would also like to mention at the outset that just yesterday we received a letter from Nevada's administrator for environmental protection, I think as you now know from prior testimony, asking the Department to resubmit permit applications that the State had previously refused to process. We submitted those yesterday.

We are pleased at this indication from the State that they now may intend to begin to cooperate with the Department in the scientific investigation of Yucca Mountain. We are, however, in view of the State's extensive, lengthy record of non-cooperation, still unconvinced as to the possible outcomes of the permit requests and the response by the State.

The Department will closely monitor the State's actions with respect to the processing of these permits, of course, and keep your committee advised.

I would like to give a brief summary, but before I do I would like to add a little global perspective. This country owes more than 20 percent of its electrical generation from the use of more than 110 safely operating nuclear power plants.

Indeed, there are more than 400 nuclear power plants operating in the world today providing electricity. Clearly, nuclear power is a source of energy readily available, domestically generated, and not susceptible to irrational actions such as those by Iraq that we have seen recently in the Persian Gulf.

What you heard this morning and what I am here to talk to you about is the management of the by-product of nuclear generation. This is not a new subject to this committee, to me, or to anyone else in the world cognizant of nuclear power and its process. In fact, safe, permanent disposal of spent nuclear fuel is a subject which has been published, politicized, and sensationalized to the point that science, technology, and society have gotten all tangled up in the complexity and volatility of the social versus technical issues involved.

The United States has, and continues to be, a leader among nations when it comes to technology. Safe nuclear waste management and disposal is not only technologically possible, it is internationally agreed that deep geologic disposal for the nuclear power by-products is a suitable method of disposal. And further, international experts agree that geologic disposal, "is the way in which safety may be assured for future generations."

In addition, and most important, scientists from all 22 nations in the OECD (Organization for Economic Cooperation and Development), announced just a few weeks ago, in a report, that they are confident that the safety assessment techniques are now at an advanced state and, "they may be used to prepare safety assessments of real sites to make reliable decisions on whether those sites will be acceptably safe for all future times."

I will send a copy of this report by the OECD nations to the committee as a matter of its interest.

There is an international consensus on the major design features of underground repositories using engineered and natural barrier systems. And that the next step consists of collecting and carefully evaluating data which are specific to specific sites.

And I would say in summary of the testimony this morning before this committee, that I heard basically behind it all a plea to get on with the research so we can debunk those that are predisposed to feel it either will not work or it will work. So it seems to me that we were trying to get on the site today to find out what is wheat and what is chaff in this whole debate. And that is the whole purpose, as you know.

And, of course, the preponderance of the scientific work so far has taken to task those on the extremes that have taken positions which are so often quoted by some of the witnesses that appeared before you today. But they are very minor in nature, relative to the body of scientists, not only in the United States, but worldwide who believe we ought to get on with the research.

Mr. Chairman, there are a dozen countries that have decided on geologic disposal and with whom we are exchanging important information. The United States and the Soviet Union are cooperating to an unprecedented extent in the area of nuclear waste storage and disposal and the technology is mature for conducting scientific investigation.

For example, we have countries now that have active nuclear waste management programs and are moving toward repository schedules in this fashion. Belgium will begin operation of its repository in 2025; Finland in 2020; France in 2010; comparable with the United States, Germany in 2008; Japan in 2030; or sometime after that, Spain in 2020; Sweden in 2020; Switzerland in 2025; United States in 2010. These are examples of geologic repository initiatives by other nations in the world whose scientists do believe, in fact, that this is the way to go.

In this country we are making a giant global demonstration step with the opening of the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico, this year. While the nuclear waste that will be place in the so-called WIPP repository over the next several years is different from spent fuel and high-level radioactive waste from commercial reactors, the concept, construction and operation of a deep geologic repository is the same. We have spent 15 years conducting scientific investigations characterizing the WIPP site.

[The prepared statement of Secretary Watkins follows:]

PREPARED STATEMENT OF HON. JAMES D. WATKINS, SECRETARY, DEPARTMENT OF ENERGY

Mr. Chairman and Members of the Committee: I appreciate the opportunity to testify before you today on the status of the Civilian Radioactive Waste Management Program at the Department of Energy. While I have a number of items of good news to report today, I must also advise that there remains a critical impediment to the Department's ability to implement the Congressional mandate contained in the Nuclear Waste Policy Act, as amended (NWPA). I will elaborate on these matters later in my statement.

BACKGROUND

After many years of national debate concerning the process, timetable, and funding for developing this Nation's high-level radioactive waste management system, Congress took a major step in December 1982 with the original passage of the NWPA. That Act established a national policy for high-level radioactive waste disposal, a step-by-step process, a timetable, a funding mechanism, clear responsibilities for those Federal agencies implementing the law, and specific roles for participating and affected parties in developing the waste management system. Congress took these actions to resolve the national problem created by the continuing accu-

mulation of high-level radioactive waste and to provide for permanent disposal of that waste in a way that protects public health, safety, and the environment.

Deep geologic disposal for spent nuclear fuel and high-level radioactive waste was designated by Congress as the most environmentally appropriate means of permanent disposal for the United States. This national decision was consistent with recommendations made 25 years earlier by the National Academy of Sciences, and consistently advocated by knowledgeable scientists in this country and in other nations also faced with the challenge of high-level radioactive waste disposal.

Five years after passage of the 1982 Act, and following extensive geologic and environmental data evaluation on nine sites in six States, Congress directed, among other things, that the Department of Energy's (DOE) Office of Civilian Radioactive Waste Management (OCRWM) focus detailed scientific investigations on only one site—Yucca Mountain in the State of Nevada—to assess whether or not that site is suitable for development of the Nation's first geologic repository.

In late 1988, DOE issued a detailed site characterization plan for carrying out site investigations at Yucca Mountain. Issuance of this document followed public bearings in Nevada and receipt of comments from the State of Nevada, the Nuclear Regulatory Commission (NRC), the nuclear power industry and the public on a consultative draft of the plan. Then in November 1989, following my comprehensive review of the program, I submitted a "Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program." The Report contained a three-point plan which centered on restructuring OCRWM, taking initiatives to gain access to Yucca Mountain to continue the scientific investigations needed to evaluate the site's suitability for a potential repository, and proposing an initiative for establishing integrated monitored retrievable storage (MRS) with a target for spent fuel acceptance in 1998.

The management issues have been solidly addressed. I have worked closely with Dr. John Bartlett, appointed by the President and confirmed by the Senate last April, and together we have made a very positive contribution, and have taken a number of direct actions that are very important to the program's forward progress. As part of this progress, we have reorganized OCRWM to replace the previous matrix management with direct lines of responsibility, authority and accountability. In this reorganization, the Office of Geologic Disposal replaces the Yucca Mountain Project Office and reports directly to the Director of OCRWM, rather than to the Nevada Operations Office. As part of the basis and planning for this reorganization, we have established a Management Systems Improvement Strategy (MSIS), which involves a more rigorous program approach based on systems engineering principles. In preparing for a new Mission Plan Amendment, we have conducted a series of workshops that involve interested and affected parties in developing a set of strategic principles that OCRWM will use to refocus and implement its mission under the NWPA, as amended. The Mission Plan Amendment is scheduled to be issued at the end of this year.

We have continued to take steps to ensure that OCRWM is ready to initiate new scientific investigations as soon as it is allowed to proceed. Quality assurance audits have been conducted both at Headquarters and the Yucca Mountain Site Characterization Project Office to assure that the program meets NRC requirements in all activities at all levels of the program. Study plans have been completed for the first set of tests that would be initiated with the start of new scientific investigations—those on geologic stability in Midway Valley, and in Trench 14 on the origin and age of calcite silica deposits. In addition, effort is underway to identify a prioritized set of tests that would result in determination of the suitability of the Yucca Mountain site as a potential disposal location as early as possible.

In response to concerns raised by the NRC, the Nuclear Waste Technical Review Board, the State of Nevada and others, we have evaluated present and alternative designs for the Exploratory Shaft Facility. We have received preliminary results of that evaluation and have initiated design studies to support a final decision later this year.

As a result of all these activities; OCRWM has established its readiness to proceed with Midway Valley and Trench 14 site characterization, and with carrying out its responsibilities under the NWPA.

Concurrently, the efforts of the independent Nuclear Waste Negotiator—Mr. David Leroy—are progressing. I am optimistic that his activities will result in identifying a willing host for an MRS. In a recently signed Memorandum of Understanding, Mr. Leroy and I have established the initial procedures under which the Department will provide his office with information and assistance.

Now, before I focus on the huge problems we have encountered in trying to proceed with scientific investigations at Yucca Mountain, I would like to discuss the current court situation.

SUPREME COURT DECISION

On March 4, 1991, the U.S. Supreme Court denied the State of Nevada's petition for a writ of certiorari in which Nevada sought review of the unanimous decision of the Court of Appeals of the Ninth Circuit in the case of *Nevada* v. *Watkins* (S.Ct). In this case, as you know, Nevada challenged the constitutionality of the Nuclear Waste Policy Act, as amended, and the authority of the Secretary of Energy to proceed with the site characterization of Yucca Mountain. The outcome of this litigation serves to sustain my earlier determination not to recognize the State's notice of disapproval and confirms that the State's attempted legislative veto is preempted by the Act. The decision of the Supreme Court will also allow the Federal District Court in Nevada to render its decision on DOE's motion for summary judgment in *DOE* v. *Nevada* (D.Nev.), an action brought by the Department to compel Nevada to process three environmental permits needed to proceed with new scientific investigations of the congressionally mandated site at Yucca Mountain.

OBSTRUCTION BY THE STATE OF NEVADA

In addition to the case pending before the Federal District Court, I'd like to elaborate on the critical impediment remaining to continuing future progress at Yucca Mountain.

Despite the clear direction by Congress that site investigations proceed at Yucca Mountain to determine whether or not that site is suitable for development of a repository, the State of Nevada has exhibited its firm intention to obstruct access to and, therefore, site investigations of, Yucca Mountain.

Despite the State of Nevada's clear right under the law to participate and its acceptance of Federal grant funds to oversee our investigation in Nevada, it refuses to participate in key workshops and in public meetings held in the State to address public interests and concerns.

Despite renewed and growing national concern over the qualify of the environment, the State of Nevada continues to thwart the Department's attempts to resolve one of the great environmental responsibilities facing us today—long-term safe storage, management and disposal of high-level radioactive waste.

There are at least a dozen significant examples of intransigence on the part of the State of Nevada with respect to DOE's activities at Yucca Mountain. In documents filed before the courts and in statements reported to the press, the State of Nevada has repeatedly indicated that it intends to ". . . exercise every power and every aspect of its inherent jurisdiction to frustrate the Federal Program."

This is completely unacceptable to me, as I know it is unacceptable to Congress. The Department has made every effort, and continues to make every effort, to interact with the State in a responsible and in a responsive manner. In return, the State:

Has turned to the courts to oppose DOE's activities at Yucca Mountain; then refused to accept the courts' decisions; and finally indicated that when it loses in cases already brought, it has other suits "on the shelf" ready to file.

Has refused to process permit applications that were filed by DOE as long as three years ago and that are required to permit DOE to begin new surface-disturbing scientific investigations. Interestingly, these new scientific investigations are part of a revised surface-based testing program which has been designed to address as early priorities those issues which the State itself has urged should be addressed first and which it asserts would disqualify the site.

Is conducting environmental studies which not only interfere with DOE studies, but which are themselves not approved by the agency with primary jurisdiction, the U.S. Fish and Wildlife Service.

Has denied the annual renewal of the wildlife handling permit for DOE's contractors which allows, among other things, desert tortoise monitoring programs.

Has ignored requests by DOE for publicly available information, such as copies of transportation reports and socioeconomic studies prepared under grants funded by DOE.

Refuses to release scientific evaluations by the State's own scientists.

NATIONAL PROBLEMS REQUIRE NATIONAL RESOLUTION

Congress has given DOE a mandate, but despite the numerous aggressive steps we have taken we have been unable to meet that mandate. Nevada has thus far been

successful in thwarting the will of Congress, and it appears that the State of Nevada will attempt to continue to frustrate the Department's efforts to carry out Congress' mandate for a very long time.

Nevada Governor Bob Miller, in an interview reported in the December 17, 1990, edition of "Inside Energy," stated that ". . . there are a myriad of issues that need to be resolved in the courts." As I have previously noted, the State of Nevada has forced DOE to litigate the State's refusal to process applications for three environmental permits sought by the Department for scientific investigation activities at Yucca Mountain. DOE's judicial action against the State, seeking a court order requiring the State to process these permits, had been stayed pending resolution of the State's petition to the U.S. Supreme Court mentioned earlier, but may now be prepared to proceed. That case rejected the State's legislated "veto" of the so-called "Selection of Yucca Mountain for a repository." As Congress well knows and as the U.S. Supreme Court has confirmed, Yucca Mountain has NOT been selected for a repository—it has only been designated by Congress for comprehensive, publicly open, and extensively reviewed scientific investigations.

CONGRESSIONAL ACTION

While we would continue to expect the litigation we previously mentioned to be resolved in DOE's favor, there are a minimum of 15 additional permits (State and Federal) that the Department will have to obtain during the course of site characterization. It appears that the State intends to litigate on each and every permit application. This extensive litigation would conceivably delay the program indefinitely into the future. In addition, even if the State did begin processing our permit applications, the processing time could be lengthy and protracted.

The present program activities at Yucca Mountain cannot be sustained through protracted litigation. He would not be able to maintain meaningful work and morale for present personnel, whose skills are needed for active pursuit of the site evaluation mission. He would have to stop work in many areas and convert to a long-range research and development program. If this happens, the Department will be perceived as having failed to execute its mission, and Nevada's efforts to thwart the will of Congress will be seen to have succeeded.

Failure to proceed at Yucca Mountain will have other important adverse consequences. Delays impact the economy through the utility ratepayers. In a program with a budget such as ours, delay has serious cost consequences. We already have indications from the nuclear power industry, the electric utilities, and the National Association of Regulatory Utility Commissioners, which represents the ratepayers who provide funding for the Nuclear Waste Fund, that strong action, including litigation and proposals for legislation, can be expected if the program continues to languish. The efforts of the Nuclear Waste Negotiator to find a site for a Monitored Retrievable Storage Facility or an alternative candidate repository site may also be affected. In sum, the Department believes that failure to proceed at Yucca Mountain would have adverse effects throughout the high-level waste management program, and that as a result of Nevada's scorched-earth battle plan, the issue of repository siting will have to be readdressed by Congress.

The Department takes its responsibilities under the NWPA very seriously. I have been directed by the President to work closely with industry and State governments to proceed swiftly toward deployment of a means of storing and disposing of spent fuel and high-level radioactive waste.

Since the first National Academy of Sciences report on this subject in 1957, there has been a continuing international technical consensus that this country and other nations are capable of safely disposing of spent fuel and high-level waste in deep geologic repositories. While the safe management of high-level waste is one of the Nation's pre-eminent environmental challenges, there is a technical consensus that it is solvable.

Congress took action in 1982 and again in 1987 for DOE to proceed towards that goal. DOE is ready scientifically and managerially to proceed with new site investigations. I would like to emphasize that we do not in any way seek exemption from environmental protection requirements. On the contrary, we believe the Department's proactive efforts demonstrate our determination to safeguard the environment. We seek only assurance of the opportunity to proceed with our mandated responsibilities for evaluation of the Yucca Mountain site.

To provide that assurance, it appears that Congress must act again.

NATIONAL ENERGY STRATEGY

As you know, on February 20, 1991, the President announced and forwarded to Congress the National Energy Strategy (NES). A key element of the NES is maintaining the nuclear energy option by removing undue regulatory and institutional barriers to nuclear power use. The NES identifies an important and growing role for nuclear energy as part of a balanced array of energy sources for meeting the Nation's energy needs, especially the growing demand for electricity. Clearly, an important obstruction to this growth is the need to demonstrate greater progress in managing and disposing of the waste we already have. The principal obstacle to progress is now the continuing inability of the Department to undertake needed efforts in characterizing a candidate site for a potential geologic repository due to the actions of the State of Nevada. Until this impediment is removed, the Department will be unable to fully carry out its mandate to find an appropriate way to deal with the Nation's growing accumulation of high-level radioactive waste in a timely manner, and the potential for the continuing development of nuclear power identified in the NES may not be realized.

CONCLUSION

As I stated in a letter to the Committee on October 11, 1990, I strongly believe that legislative action to ensure access to Yucca Mountain for scientific investigations, and to overcome permitting obstructions, is necessary to enable us to fulfill our mandate from the Congress. Title V of the Administration's National Energy Strategy Act allows the Department itself to process all the environmental permits needed to undertake site characterization activities at Yucca Mountain. We would not have to obtain permits from State or local governments, but I, as Secretary, would be required to consider the views of the State, local, and Tribal officials regarding the substantive provisions of State and local laws affecting site characterization activities. The Department stands ready to work with you on passing this legislation and taking this important step toward safe, timely, and effective management of high-level radioactive waste. In light of concerns about global warming, dependence on foreign oil, and recent events in the Persian Gulf, nuclear power must continue as a current and future source of electric generation. Proceeding with the development of a nuclear waste management system is an integral component to preserve our energy choices and effectively protect the environment. I ask for your help to proceed.

Mr. Chairman, this concludes my remarks.

The CHAIRMAN. Admiral, let me interrupt you at that point, because we do have your statement in the record, and I have read your statement. And there are some key questions I want to be sure we get on the record today, so please excuse my interruption, but I want to be sure we get them.

Now, you had sent up legislation which makes EPA the issuing authority for the various permits that would have to be granted here. That is correct, is it not?

Secretary WATKINS. Yes, sir.

The CHAIRMAN. Now, we just had—in fact we are still in litigation in the Ninth Circuit. I think that is on appeal to the Supreme Court, isn't it?

Secretary WATKINS. No, the Supreme Court has acted on that.

The CHAIRMAN. I mean, the Supreme Court has acted on it.

Secretary WATKINS. And acted in our favor, yes, sir. The district court now has acted as of yesterday, and I believe that was touched on by Governor Miller this morning.

The CHAIRMAN. All right, but those permits are still in litigation, are they?

Secretary WATKINS. Well, sir, I think it is very important for the committee to understand where that particular court case is right now in the district court. And I would like to go through that, because I think it is very germane to this discussion.

In the decision yesterday, the judge did the following: directed the parties to file a stipulation within 30 days saying that the air quality surface disturbance and the underground injection control application—these are the permits—be expeditiously processed. It also said that he will enter a judgment treating the stipulation as a court order, and that he set July 17, 1991 for a status conference to review what progress has been made with respect to the water appropriations permit.

Now, if we could look forward to productive and cooperative DOE-State negotiations now, this would be good news. But continuous threats of legal mischief by the State, even after the Supreme Court decision, does not bode well. And let me just point out why it does not.

The CHAIRMAN. Well, I understand. We have got those statements which are very plain. My next question is are these the only permits you will need to get the site characterization?

Secretary WATKINS. No, sir. We will need these first three, two in the very near timeframe that are at stake, including the air permit. But we will need 15 more.

The CHAIRMAN. Now, can you apply for all 15 of those or do they come up seriatim?

Secretary WATKINS. They come up sequentially, Mr. Chairman, in terms of the need to have them at certain times. And our total program management regime has been well published.

The CHAIRMAN. Now, when the Governor says that this process will be tied up in the court for years and speaking to teenagers when he says your generation will inherit this battle, do you take that statement seriously?

Secretary WATKINS. Absolutely, sir. He has the ability and we have an expectation that it would take 6 to 8 years.

The CHAIRMAN. 6 to 8 years——

Secretary WATKINS. Through a litigious process to get all 18 permits cleared, one at a time through this process of going back and forth appealing, of finding new hurdles for us to jump over and the like.

The CHAIRMAN. That actually is the period of time that they said. How can you get it done that fast?

Secretary WATKINS. Well, I do not know.

The CHAIRMAN. You have your counsel here. I wonder if your counsel would speak to that?

Secretary WATKINS. Well, we could have the counsel talk to it.

Mr. WAKEFIELD. You cannot guarantee it, Mr. Chairman. Because what could happen here—first of all, what the judge did yesterday was to direct the State and the U.S. Government to go enter into an agreement. We have not entered into that agreement yet, but all that agreement ultimately will say is the State is suppose to act on the permits. That action not only can be dragged out but can result in a denial of the permits. If that happens, then we have to go through the State administrative proceedings which could take 2 or 3 years before we can get back to the district court again. And that is just on the first two permits.

The CHAIRMAN. And then—now of the 15 permits, tell me how they come up sequentially? Is it one at a time or is it two at a time?

Mr. WAKEFIELD. Let me ask Mr. Bartlett to answer that.

Mr. BARTLETT. They would come in combinations, approximately two or three at a time, if you will, depending on the status of progress with respect to site evaluation.

The CHAIRMAN. So you might have in effect as many as maybe six or seven iterations of sets of permits?

Mr. BARTLETT. That is correct, Mr. Chairman.

The CHAIRMAN. And each one could take how long?

Mr. BARTLETT. Conceivably several years.

The CHAIRMAN. So it seems to me 6 to 8 years, if you are talking about maybe six or seven iterations with several years at a time. I mean, 6 to 8 years would not do it at all. I mean we are talking about way beyond the lifetime of maybe anybody in this room.

Secretary WATKINS. Oh, I think that is right, Mr. Chairman. And we would think it would not be less than 6 to 8 years. We do not know how long it would take. Our lawyers have looked at this thing and said there are so many avenues that they can follow to do exactly what they indicated this morning, to frustrate the system.

The CHAIRMAN. Now, tell us—we know but for the record—tell us what characterization is—I mean, there was an article in the *New York Times* quoting a scientist named Szymanski saying that this is not a suitable site because there is underground water that can come up through faults, et cetera. Now, can you tell me how the characterization process would deal with that kind of claim?

Secretary WATKINS. Yes, sir, we can. I would like to have the Director of the Office of Civilian Radioactive Waste Management, Mr. Bartlett, walk through that with a picture here of Yucca Mountain and the various aspects of the site and what actually would happen, the size of the footprint and so forth, and how we would be able to do just that. So if I could, Mr. Bartlett?

Senator WALLOP. Mr. Chairman, before he does that, I would ask unanimous consent that a statement by Allen Keesler on behalf of the American Nuclear Energy Council be inserted into the record.

The CHAIRMAN. Without objection.

[The statement referred to follows:]

PREPARED STATEMENT OF ALLEN J. KEESLER, JR., ON BEHALF OF THE AMERICAN NUCLEAR ENERGY COUNCIL

My name is Allen J. Keesler, Jr. I am president and chief executive officer of Florida Power Corporation. Florida Power owns and operates the Crystal River 3 commercial nuclear energy plant. I also have the privilege of serving as Chairman of the American Committee on Radwaste Disposal (ACORD), the senior utility industry body on nuclear waste and transportation issues. This statement is also provided on behalf of the American Nuclear Energy Council (ANEC), the Edison Electric Institute (EEI), and the Utility Nuclear Waste and Transportation Program (EEI/UWASTE). Mr. Chairman, I appreciate the Committee's keen interest in this program and I thank you for the invitation to submit a statement for the record.

The war in the Persian Gulf has once again demonstrated the need for a national energy strategy that encourages conservation and energy efficiency along with the production of secure, domestic sources of energy. Given our nation's urgent need to deal with the security implications of energy, coupled with growing concerns over global climate change, nuclear energy is uniquely situated as a major base load energy source that can effectively address all of these Issues. Any balanced, comprehensive national energy strategy must include nuclear energy as one means of meeting the Nation's growing electrical requirements, provide for energy security, and promote environmental progress.

We applaud the efforts and leadership of both this committee and the Administration in helping to shape such a national energy strategy. Moreover, we are encouraged that the bill introduced by yourself, Mr. Chairman, and Senator Wallop, the "National Energy Security Act of 1991" (S. 341), and the Administration's "National Energy Strategy Act" (S. 570) include vital initiatives that address the institutional issues that inhibit nuclear energy from contributing its full potential to our nation's growing energy requirements.

One such issue is the subject of this hearing—high-level radioactive waste management. With the urgent need for a national energy strategy, the Nation has a fundamental interest in ensuring the timely implementation of the federal civilian high-level nuclear waste program. Included as part of the Administration's "National Energy Strategy Act" is an initiative that seeks to end the impasse at Yucca Mountain. In 1987, Congress chose Yucca Mountain as the first location to be studied as a potential site for the Nation's first high-level radioactive waste repository. The Department of Energy (DOE), which Congress has instructed to study the Yucca Mountain site, is ready to go forward with vitally needed on-site characterization studies. Unfortunately, political, rather than regulatory limitations or technical concerns have prevented the Yucca Mountain program from proceeding.

Resolving the impasse at Yucca Mountain must be one of the Nation's foremost priorities. Continuing to demonstrate real progress toward identifying and developing a high-level waste repository is critical to eliminating an issue that clearly affects public confidence in nuclear energy. Therefore, this statement has only one primary goal, to encourage this committee, and all of Congress, to act now to resolve the impasse between the State of Nevada and the Federal Government.

MANAGEMENT OF HIGH-LEVEL WASTE

On-site Storage

The NRC has concluded that 83 reactor plants will have reached spent fuel storage capacity limits by the year 2010,[1] the year that DOE projects for the opening of a permanent repository. This mismatch has forced the industry to look to the Monitored Retrievable Storage (MRS) facility to fulfill DOE's 1988 spent fuel acceptance commitment. However, individual utilities have had to begin preparing for the possibility that they will run out of storage capacity before either the MRS facility or the repository will begin accepting the nation's high-level waste. This means that not only will these utilities, through their ratepayers, continue to finance the vast majority of the cost of the repository, and a monitored retrievable storage facility at a combined cost of more than $500 million annually but at the same time they must also pay millions of dollars for additional on-site storage.

The delays in the DOE high-level radioactive waste program, the cost of the DOE program, and the cost of additional on-site storage has created concerns among state public utility commissions (PUCs) and the utility industry. The PUCs set the rates for electric utilities operating nuclear energy plants and have allowed the payment of more than $5.6 billion dollars of ratepayer monies into the Nuclear Waste Fund. Individual utilities are requesting ratepayer funding from the PUCs for on-site storage prior to 1998.

However, if DOE does not meet its 1998 spent fuel acceptance obligation, utilities will be forced to request supplemental ratepayer funding for additional on-site storage. This leaves industry leadership and the PUCs questioning the lack of progress of the federal program, which may force ratepayers to pay twice for storing high-level waste. Given the current impasse, industry leadership and the PUCs may be forced to contemplate how much longer this federal program, which is not moving forward, should be willingly funded by the ratepayers and supported by the utility industry.

Repository Safety

The nuclear energy industry, and all others concerned with the repository project, believe one critical objective must be accomplished—that is, regardless of where DOE finally sites a repository, it is absolutely essential that it protect the health and safety of the public. The study of a site's ability to protect the public health and safety is what the DOE's site characterization is all about.

This study, detailed in the DOE's 6,500 page Site Characterization Plan, is designed to investigate thoroughly all technical uncertainties associated with a proposed repository site. Technical aspects of site characterization involve investigating

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[1] Spent Fuel Storage Requirements 1990-2040, DOE Report RL-9044, November 1980, table B-3A.

seismicity, vulcanism, groundwater flow, rock formation characteristics, climate change, and natural resources. Additionally, as a part of site characterization, there will be environmental, socioeconomic, and transportation studies to determine the impact of the repository on the region surrounding the proposed site. The entire study process could take as much as seven to ten years, or may end after only a few years with a determination that the proposed site would not be suitable for a repository. Consequently, the program would have to be moved elsewhere and the process begun anew. Currently, if DOE determines a site will not be suitable for a repository, the NWPA does not contain authority to redirect the program elsewhere. In addition to providing access to the Yucca Mountain site for characterization, Congress should adopt legislation that would create a mechanism, triggered if DOE makes an unsuitability determination for the Yucca Mountain site, that would focus the program on other potential repository locations.

The characterization studies at Yucca Mountain will proceed with the oversight of numerous groups, including: the host state, the host state's university system, affected counties, the Nuclear Waste Technical Review Board, the National Research Council of the National Academy of Sciences, the Environmental Protection Agency, the United States Geologic Survey, the General Accounting Office, the Office of Management and Budget, the Office of Technology Assessment, the Nuclear Regulatory Commission, this Senate Energy and Natural Resources Committee, the Senate Appropriations Committee, the Subcommittee on Energy and Water Development of the House Appropriations Committee, the Subcommittee on Energy and the Environment of the House Interior and Insular Affairs Committee, the Subcommittee on Energy and Power of the House Energy and Commerce Committee, and the Subcommittee on Energy Research and Development of the House Science, Space and Technology Committee.

These oversight groups serve to guarantee that the studies continue to be open and subject to thorough scientific peer review. This scientific oversight is essential to secure the industry's objective of a safe repository, wherever the repository is finally located.

Resolving the Impasse

Congress has instructed DOE to study the suitability of Yucca Mountain, Nevada for a potential repository. In order to determine if Yucca Mountain is suitable to house a repository, DOE must complete its on-site scientific studies. Even with this limited objective—to study the site—Nevada has used every litigation weapon at its disposal to block these studies. Nevada began the litigation in the U.S. Court of Appeals for the Ninth Circuit. There, the court ruled unanimously against Nevada on all its contentions, including rejecting Nevada's constitutional challenge to the Nuclear Waste Policy Act of 1982, as amended (NWPA), and Nevada's holding that the NWPA preempted state legislation purporting to block storage of high-level nuclear waste in the state. The court also upheld the Secretary of Energy's decision to continue site studies at Yucca Mountain. Nevada appealed and the U.S. Supreme Court refused to review the case.

In spite of the Supreme Court decision not to review the Ninth Circuit Court's decision, the state continues to be uncooperative. Nevada has refused to process permits needed to begin on-site studies of Yucca Mountain. After two years of frustration, in January 1990 DOE was forced, in parallel with the litigation initiated by the State of Nevada in the Ninth Circuit, to file a lawsuit against Nevada in Federal District Court asking the court to order Nevada to process the permits. Assuming that the Court orders the State to "act" on the permits, Nevada will likely deny them. Then, to proceed with the program, DOE would be forced to litigate each permit denial, starting the time consuming process all over again. Moreover, Nevada could delay this process even further because the present litigation involves only three of many permits.

Ligation is not the answer. This litigation cycle is unproductive and, for all practical purposes, unending. While DOE is committed to seeing the litigation of all legitimate legal issues through to their conclusion, we believe that Congress must legislate to break the Yucca Mountain impasse in a timely manner so that DOE can proceed with site characterization studies.

THE NEED FOR BENEFITS

Substantial benefits will, by the nature of the project, extend to a potential repository host state, including jobs, high-tech businesses, diversification of the economy and increased tax base, among others. In addition, the 1987 bill reported out of this committee, provided for a representative benefit schedule that would include additional improvements for education, roads, or whatever projects the host state pre-

ferred. The industry endorses such an approach, which included an ar nual payment in the amount of $50 million dollars to the host state during the characterization studies, a payment of $100 million dollars upon first receiving spent fuel, end annual payments in the amount of $100 million dollars thereafter until the facility is closed. Another aspect of this benefit schedule that the industry supports required the state to transfer at least one-third of each payment to affected units of local government.

Moreover, there will be substantial infrastructure improvements to highway and rail systems for a host state that will be needed for the facility. There may also be benefits that do not require the direct payment of money, such as assistance in obtaining rights-of-way for projects and public lands issues, help to resolve water problems if the host is a western state, and other packages that the individual host state might negotiate. We also support this form of assistance.

CONCLUSION

Congress has made clear its intent to move toward with a solution to the disposal of high-level radioactive waste. First, by passing the NWPA in 1982, and, again, with amendments to the NWPA in 1987. Today, there exists an impasse in the program frustrating DOE's attempts to implement that clear intent. An intent that initially involves very deliberate technical and scientific studies, including broad and independent oversight, to assure that the Yucca Mountain site is suitable and completely safe to function as a high-level waste repository.

Even with this clear congressional directive, Nevada continues to frustrate the program. The high-level radioactive waste program is tied up in seemingly endless litigation. Not even the unanimous decision of the Ninth Circuit Court of Appeals rejecting Nevada's attempts both to veto site selection and block storage of high-level nuclear waste in the state could end the impasse. Not even the U.S. Supreme Court's refusal to review the case has ended the impasse. It appears that Congress is left with no choice but to legislate to move the program forward. In doing so, Congress should consider including benefits to make the legislation more equitable for the host state.

Finally, we feel it is imperative that Congress act on this vital national energy policy issue and resolve the impasse at Yucca Mountain now. Such legislation will remove a major stumbling block for regaining a viable nuclear energy option as an integral part of a bipartisan national energy strategy that has the support of the Congress, the Administration and the American people. Such a strategy is necessary to meet our nation's growing electrical requirements, to establish energy independence, and to promote environmental progress in the United States.

The CHAIRMAN. Mr. Bartlett, please proceed.

Mr. BARTLETT. Thank you, Mr. Chairman. Senator Reid this morning spoke about having mother nature speak. What we are trying to do is get mother nature to do precisely that by determining what she had to say through interrogation, if you will, of what the site features are. If I may use this to give you a perspective of the Yucca Mountain site and give you an idea of what is involved.

We have indicated here that this is the Yucca Mountain crest. Off in the distance approximately 50 or 60 miles is Death Valley. You are looking approximately southwest here. The mountain itself, essentially from here to here, you are looking at about a 3-mile span. The repository would be under the mountain. To give you an idea from one end to the other is approximately the distance from the Capitol Building to the Lincoln Memorial. So that is the kind of dimensions we are dealing with.

We have indicated several of the features that are relevant to the evaluation, but to give you an idea about the repository itself, it would be beneath the mountain, about 1,100 feet beneath the crest, which sits at about 4,800 feet itself. The water table for this site is another 1,100 feet below where the repository would be.

You are looking at a distance from the Yucca Mountain crest to this area indicated as Midway Valley, which is one of our initial targets for further study, of about a little over a mile.

The CHAIRMAN. So where the nuclear waste would actually be stored would be how far above the water table?

Mr. BARTLETT. About 1,100 feet. And it would be approximately in this area if you will, underground as I said. 1,100 feet beneath the surface, and then 1,100 feet above the water table. And the means by which we would get there would be by drilling essentially a tunnel to first explore the geology through this interrogation of mother nature, a tunnel roughly from this area into the mountain, angling down at about a 10 percent grade or less, down to this 1,100 foot level beneath the crest.

The CHAIRMAN. How big is the tunnel you would build?

Mr. BARTLETT. The length of the tunnel accessing the region where the repository would be would be on the order of a mile. The dimensions——

The CHAIRMAN. And how big around would the tunnel be?

Mr. BARTLETT. It would be on the order of 20 feet around.

The CHAIRMAN. Big enough to take heavy machinery down?

Mr. BARTLETT. That is right. We would have to be taking into it tunnel-boring machines and the like, so it is pretty good sized.

The CHAIRMAN. Now, why do you have to drill that big? Why can you not just put some shafts down there?

Mr. BARTLETT. Well, in addition to the underground exploration, which is to ask mother nature what is down there, we also will be doing what we call the surface-based testing program which does precisely that—put bore holes down into the geology.

The CHAIRMAN. Well, why are the bore holes not sufficient?

Mr. BARTLETT. Because they cannot get enough of a span of the geologic features and show their connectiveness. If you go just narrowly into a bore hole, you see only what is in the immediate vicinity. And so it would take very many bore holes—in fact we plan a good many bore holes. But it still does not give you a sense of continuity, and also of the deep geologic features.

The CHAIRMAN. Now, Mr. Szymanski has come up with a theory that this is not a suitable site. Now, tell me why you cannot say yes or no to his claims, or can you, without characterization?

Mr. BARTLETT. Well, the issues at present are unresolved, because we need additional data. His theories are based on data obtained here in what is called Trench 14. It is one of the trenches that has been dug in the exploration or site evaluation activity so far.

In that trench were found some mineral deposits. And the issue concerning those deposits is did they come basically as a result of rainfall in what are called soil-forming processes, or are they a result of upwelling of ground water into the geology at this location and, as a result thereof, forming the deposits? If it was a result of the upwelling, which Mr. Szymanski believes it is, then that indicates the potential for ground water to rise into the level of the repository.

Alternatively, the data indicate to most people that in fact those deposits are the result of rainfall and soil-forming deposits, and that the potential for the ground water to rise is, in fact, extremely

limited. The jury is still out. We need to deepen that trench, and that is again one of our first targets, to get more data about those deposits, and then finally to close the issue on where those deposits originate.

The CHAIRMAN. As I understand it the weight of scientific opinion is that Mr. Szymanski is not correct.

Mr. BARTLETT. That is the current picture.

The CHAIRMAN. But that in order to be sure you have got to go in and characterize, and that by digging that tunnel in there, you will be able to scientifically prove or disprove his theory.

Mr. BARTLETT. Well, let me emphasize that with respect to his theory, the principal effort is to deepen the trench. The tunnel will get down into the geologic features well below the surface. We will also be doing other explorations of near surface locations—and we know there are other deposits—to confirm the story and extend the data that support whether or not Mr. Szymanski is right.

The CHAIRMAN. Now, the scientists do agree that if you undertake this—I guess it is a multibillion dollar characterization—the drilling of the trench, the boring of the bore holes, doing all of those things for which these permits are required—that you will, to a scientific certainty, be able to determine the safety of this site. And otherwise, you cannot. Is that correct?

Mr. BARTLETT. There is a consensus that that is true. And as you heard Admiral Watkins state, there is consensus that the methods are available to obtain the data.

The CHAIRMAN. But otherwise it cannot be done?

Mr. BARTLETT. We must ask mother nature what she has to say. It is as simple as that.

The CHAIRMAN. Thank you very much, Dr. Bartlett.

Mr. BARTLETT. Thank you.

The CHAIRMAN. Now, Admiral, how many sites do we have at which nuclear waste is presently stored? Is it 33 States?

Secretary WATKINS. About 112 reactor sites now.

The CHAIRMAN. In 33 States?

Secretary WATKINS. Yes, sir, I believe that is correct, sir.

The CHAIRMAN. Now, Senator Reid suggests that we just leave it at the site. Why can we not do that?

Secretary WATKINS. Theoretically you might be able to do that if you could get agreement from each of the States involved that they want to expand their facilities to store waste in pools for the next generation to deal with.

The CHAIRMAN. I am talking about permanently.

Secretary WATKINS. Permanently—I do not see how you can do that. MRS—we would have basically 112 MRS equivalents is what we are really talking about. And I do not see that as boding well for the future of nuclear power as being a key element of the national electrical generating system. I do not see how any investor would want to take a chance—that there is no way to dispose of the waste—certainly from the existing 112 plants. Now, as you know, we are studying whether to do something to minimize waste accumulation with the advanced liquid metal reactor development, with some technique such as actinide burnup. And we are doing a lot of research in that area at Argonne and at Idaho to do just that.

But for this generation—these 112 plants—we have to find a place for this. They are going to run out of pool capacity by 1998 in 27 of those sites by a significant number of thousands of metric tons. So we have moved some of those spent fuel elements between storage pools and within existing utilities. On the other hand, there is very little potential there. And I do not see other States being very happy about spent fuel elements coming into spare pools perhaps from one state to another. I do not see how that will work.

Also environmental impact statements will have to be prepared, and I think we will be back in the same soup. So what we are doing by suggesting that somehow you can store this above ground in casks and that sort of thing—yes, you can do that for the time being. But we are trying to solve this for future generations. We are trying to put this away, as are the other countries in the world.

And it seems to me that is the issue here. Do we want to just kick the can down the field year after year and pass this onto our kids? I think the answer is no. Not when the best scientists in the world say geologic repositories are the way to go, and we will be the first in the world to be able to do the research and the testing to be able to demonstrate whether or not it is efficacious at this particular site that we have selected.

The CHAIRMAN. Let me ask you one more question. We have heard the nuclear waste program described today by Nevadans as being unsafe and that new information has come in. Has anything occurred since this program has come about to lessen your conviction or to increase your doubts about the wisdom of a deep repository plan?

Secretary WATKINS. No, sir, nothing.

The CHAIRMAN. Has there been any information which would rule out or rule in Yucca Mountain since it has been designated in the legislation?

Secretary WATKINS. I would say that since it has been designated in the legislation, there is much more support from the scientists. The overwhelming support from the scientific group is let us get on with the research so we know what we are really doing. And that is overwhelming. So while the Nevada delegation may select out, the ones and the twos that object, that is the whole point of the research work is to try to find out what is really going on there and to follow Dr. Bartlett's plan here. It is essential to get those answers.

The CHAIRMAN. I would like to put in the record at this time a letter from Senator Wallop and myself to Admiral Watkins dated March 15, 1991 and Admiral Watkins' response of March 19.

[The information referred to follows:]

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC, March 15, 1991.

Hon. JAMES D. WATKINS,
Secretary, U.S. Department of Energy, Washington, DC.

DEAR MR. SECRETARY: As you know, we are extremely concerned about the Department's inability to initiate site characterization activities at the Yucca Mountain site, as mandated by the Nuclear Waste Policy Act of 1982. Efforts to conduct detailed testing at the site have been frustrated by protracted legal challenges to the Department's mandate to proceed. While we are encouraged by recent rulings supporting the Department's position, we continue to be concerned about procedural obstacles that may still prevent the testing.

On March 4, 1991, the United States Supreme Court upheld the unanimous decision rendered by the U.S. Court of Appeals for the Ninth Circuit in *Nevada* v. *Watkins*. Further, we understand that the U.S. District Court, District of Nevada, has scheduled a hearing on March 20, 1991, with respect to the case brought by the Department of Energy against the State of Nevada (*United States* v. *State of Nevada*) that relates to Nevada's refusal to process environmental permits that are required to carry out the characterization of the Yucca Mountain site.

While these may be indicators of progress, they do, however, raise the following questions.

1. Does the pending litigation (*United States* v. *State of Nevada*) before the U.S. District Court, District of Nevada, address all of the permits that will be needed to complete the characterization of the Yucca Mountain site?

2. What remedies are available to the Department of Energy if Nevada chooses to continue to oppose Yucca Mountain?

3. The Department of Energy has been attempting to gain access to Yucca Mountain since early 1988. How much longer can this impasse continue before you have to consider contingencies?

In light of the Committee's upcoming oversight hearing on the Department's nuclear waste program next week, it would be helpful if you could provide the responses to these questions to the Committee by close of business on March 19, 1991.

With warm regards, we are,

Sincerely,

J. BENNETT JOHNSTON, *Chairman.*

THE SECRETARY OF ENERGY,
Washington, DC, March 19, 1991.

Hon. J. BENNETT JOHNSTON,
Chairman, Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: This is in response to your letter of March 15, 1991, in which you posed three questions regarding the Department of Energy's activities with respect to the characterization of the Yucca Mountain, Nevada, candidate repository site.

As you noted in your letter, the Supreme Court announced on March 4, 1991, that it would not hear the State of Nevada's appeal from the unanimous decision of the U.S. Circuit Court of Appeals for the Ninth Circuit in *Nevada* v. *Watkins*, and the U.S. District Court, District of Nevada, will, on March 20, 1991, hear our motion for summary judgment with respect to the State of Nevada's refusal to process permits that are required for the scientific investigation of the Yucca Mountain site.

The Department, quite obviously, was pleased with the Supreme Court's decision. It disposed of the arguments that Nevada raised in an effort to prevent the Department from carrying out the mandate of Congress with respect to the scientific investigation of the Yucca Mountain site. As you know, however, there are many hurdles still to be overcome before we can proceed.

The Department of Energy intends to pursue vigorously every avenue available to us so that we can ultimately make a determination of the suitability or unsuitability of the Yucca Mountain site for possible development as a nuclear waste repository. I would like to emphasize that the Department of Energy is ready and able, at this time, to proceed with the scientific investigation of Yucca Mountain and carry out the mandate that Congress gave us when it enacted the Nuclear Waste Policy Act, as amended.

I would also like to mention that, just yesterday, we received a letter from Nevada's Administrator for Environmental Protection, asking the Department to resubmit two permit applications that the State had previously refused to process. We will resubmit the applications immediately. We are encouraged at this indication from the State that they now may intend to begin to cooperate with the Department in the scientific investigation of Yucca Mountain. We are, however, in view of the State's extensive, lengthy record of noncooperation, still concerned as to the State's future posture and actions. The Department will closely monitor the State's actions with respect to the processing of these permits.

The answers to the specific questions you raised in your letter are enclosed. I would be pleased to amplify on them, if you so desire, at the hearing scheduled for March 21, 1991.

Sincerely,

JAMES D. WATKINS,
Admiral, U.S. Navy (Retired).

[Enclosure.]

QUESTIONS FROM SENATORS JOHNSTON AND WALLOP

Question 1: Does the pending litigation (*United States* v. *State of Nevada*) before the U.S. District Court, District of Nevada, address all of the permits that will be needed to complete the characterization of the Yucca Mountain site?

Answer: The simple answer is no. The pending litigation addresses only three of the required permits. Those are the ones we need initially to begin the comprehensive scientific investigation program on the site. There are, however, at least 15 additional permits that will be required during the process. Many of those will have to be renewed periodically. Unfortunately, from my perspective, each and every one of those additional permits provides the State with an opportunity to further delay the process. This is true especially if we have to go to court over each and every one of them. We have estimated that as long as 6–8 years could be spent in litigation in order to get all the permits required for site characterization. That is an unacceptable prospect to me.

Question 2: What remedies are available to the Department of Energy if Nevada chooses to continue to oppose Yucca Mountain?

Answer: The Department potentially has three avenues open to it. One is to litigate actively against the State; another is to pursue a legislative path to solving the problem; the final one would be to report to Congress that we cannot make progress at the Yucca Mountain site and request of Congress that it reopen the Nuclear Waste Policy Act, as amended, and direct the Department to initiate a national siting survey to find an acceptable suite of potential permanent nuclear waste repository sites.

These options are not mutually exclusive. The "National Energy Strategy Act," which was submitted to Congress on March 4, 1991, contains in section 511, Repository Site Characterization, provisions that would amend the Nuclear Waste Policy Act of 1982 to allow the Department to conduct site characterization activities without the need to obtain permits from a State or local government, or Indian Tribe. It does require, however, that the Department comply with all applicable Federal laws and regulations and consider the views of State and local governments and Tribal officials regarding the substantiative provisions of State, local, and Tribal laws affecting site characterization studies. There is also a provision that provides that an action to contest the constitutionality of that section can be brought within 60 days of enactment and that ongoing site characterization work could not be enjoined during any such legal review.

Should legislation not be enacted, we will periodically evaluate our progress at the Yucca Mountain site and, given the circumstances, report to Congress and consider requesting authorization to initiate a national siting survey.

Question 3: The Department of Energy has been attempting to gain access to Yucca Mountain since early 1988. How much longer can this impasse continue before you have to consider contingencies?

Answer: Quite honestly, I don't know. Certainly, however, there is a point where the Department would have an obligation to come to Congress and say we need to look at other sites. As Secretary of Energy, I cannot allow this impasse to continue. The cost of delay is not only measured in absolute dollar terms, but also in our ability to solve a national environmental problem by finding an environmentally safe solution for disposing of nuclear waste.

We are seeking to carry out the mandate that Congress gave us with the Nuclear Waste Policy Act, as amended. Enactment of section 511 of the National Energy Strategy Act will reaffirm that mandate. If, collectively, we are serious about studying the Yucca Mountain site, then the Department must have all the tools it needs to complete the task. If we are not serious about studying Yucca Mountain, then we must go back and look at alternative sites for a repository and place renewed emphasis on the siting of a monitored retrievable storage facility.

The CHAIRMAN. Senator Wellstone.

Senator WELLSTONE. Thank you, Mr. Chairman. While we are on this topic, I just wanted to ask a couple of questions of the Admiral. The National Energy Strategy I think anticipates 190 gigawatts which is—I do not know how many plants we are talking about, maybe 250 to 300,—over the next 40 years. Will the Yucca Mountain be able to handle the waste from these plants?

Secretary WATKINS. Yucca Mountain will primarily be able to handle the waste from the entire lives of the 112 plants we now have.

Senator WELLSTONE. What about the additional plant?

Secretary WATKINS. We are doing everything possible to avoid another repository by technical review of what we can do to eliminate the actinides, which are the long-lived radioactive materials that we have to deal with that go to deep geologic repositories. That is why we have a research program going into actinide burnup, perhaps either by liquid metal reactors which we have had years and years of research on. We have got an integrated fast reactor at Argonne today, working with Argonne West at Idaho and we believe there is tremendous potential, as indicated in the industry strategy that we might be able to have a closed loop cycle with about five or six advanced light water systems with a closed loop that cycle and never allow those actinides to leave the site. That is, they will always be burned up in fuel elements and the residue waste then could be put in above-ground storage; so it is our hope that the Nation's great strength and technology development will solve that problem and we will not have it in the next generation. If we have one or two that have to come in early before we solve that problem, then we could probably handle it in the repository. And obviously we have liquified waste coming on line from both Hanford and Savannah River, concepts that will help in the future to package up the waste in smaller form to minimize the volume that is necessary now for some of the waste.

Senator WELLSTONE. Just so I can understand that, Admiral, Yucca Mountain would be for what we need to deal with now, not for the new plants that would be coming on board, which are anticipated as a part of your national energy plan?

Secretary WATKINS. Yes, but the new ones coming on board do not come on until after the turn of the decade.

Senator WELLSTONE. Right.

Secretary WATKINS. And they would not be ready to dump spent fuel elements until their own pools were filled. And so we are talking about those new reactors probably not getting up to or exceeding their pool capacity for storage for another 30 years. You are talking about 2040 before you might have to start worrying about that. And we hope to solve——

Senator WELLSTONE. Your hope is that by then we will have a plan to deal with the problem of nuclear waste.

Secretary WATKINS. Not only our hope, we have a dedicated research program to do just that, working with the best scientists in the world to try to solve that problem.

Senator WELLSTONE. But at this point in time, we do not have that?

Secretary WATKINS. No, we do not have it for the next generation. So this is I hope the only repository. I hope I do not have to leave my successor with this kind of problem.

Senator WELLSTONE. Right.

Secretary WATKINS. This is the most difficult and most potentially intractable of all the issues that I have had since I have come here, and there have been a lot of them.

Senator WELLSTONE. I think, Admiral, from the very beginning you have been very direct and very honest about this problem. And I really appreciate your leadership. I think this is one of the big questions—this whole question of how we deal with waste. And I missed the testimony this morning, but I heard about it.

Secretary WATKINS. Right.

Senator WELLSTONE. And as we know, there is a tremendous amount of distrust and just on this one Yucca Mountain, and that is just to deal with the now. And then we are talking about 250 to 300 new generating plants, and we still do not know how to deal with that problem of nuclear waste.

Secretary WATKINS. Well, I do not think we should mix them up, Senator Wellstone. If we get them mixed up now, then we are hyping this thing. Let us be straightforward. All right, we have 112 plants. Many of those are old. The Nuclear Regulatory Commission has just authorized service-life extension for most of those. They will go on for a period of time.

Those plants will run out of local storage capacity by 1998 in 27 of the 112 sites. We have to deal with that as a Nation. It is not going to get any easier. It is not going to get any easier—just put them in above-site storages, except for the MRS. The MRS is the link between today's situation and the repository, and that is very important. And that is just part of our legislation, too, to deal with the MRS.

So that by 1998, we have a place for those sites that have exceeded their fuel capacity. That is being worked on by the Negotiator now, trying to find a host State for the MRS. And he has some very serious volunteers coming on board. So I do not think that is going to be a problem. And we will be working with this committee to help solve some of those problems. So it is a tiered program between today in the local pools, to the MRS, on route to the repository in 2010—the first in the world, if you will, of this type. And we believe that the science is there to do it. It is a $15 billion program from start to finish, including the decontamination and decommissioning of all of the facilities that would surround this repository once it is closed up. So that is the kind of thing we are looking at for by about 50 years or 60 years of reactor operation in this country.

Senator WELLSTONE. The quickest follow-up question, and by the way, Admiral, I do not think you have run from the problem. I think you have been very direct about it. I fully appreciate what you are saying.

It seems to me that one difficulty in the acceptance of the Yucca Mountain waste repository, and I suppose in a way this has been part of the story of their power plants in the 1970's. It has been this widespread—and I think you can help me think this through—this widespread public distrust. I mean people are just—there are a

lot of questions people have in their minds, a lot of anxiety and maybe fear is not too strong a word. And the distrust is obviously still here. I mean, it is still out there; it is still here.

Could you reflect for me on what is the basis of that distrust as you see it? I mean that would help me kind of understand how people are thinking about this.

Secretary WATKINS. Well, I think it clearly, in our near lifetime, it has been the accident at the Three Mile Island and the Chernobyl event. Clearly those got the world's attention.

In our case, in Three Mile Island, we were predicting that in the Navy's nuclear power programs—we looked over the fence in the Atomic Energy Commission as early as 1962. Shortcuts were being taken. Cost-cutting economizers were coming to the fore instead of scientists and engineers. And so we cut corners. And we could see it coming. And we could see it coming within 20 years, as Rickover stated then. And 17 years later we had Three Mile Island.

And what it did is reveal inadequate addressal of this complex issue in a modern, tough disciplined management style that was necessary. And we have corrected that in this Nation. Congress set up the Institute of Nuclear Power Operations that is funded at $65 million a year by the American Nuclear Industry. They are all in it. They all share their mistakes now in an automated way. It is a whole new world of wide open communications to make sure these things are run safely.

Now, it has taken us 10 years. But I think if you will look at the track record at the Nuclear Regulatory Commission, it is a tough disciplined, well-managed system. And so I believe the United States has eliminated that problem.

On the other hand, the Department of Energy contributed to the doubt in the minds of the American people, witness the shutdown of our reactors at Savannah River for safety, witness the situation at Rocky Flats, witness the lack of movement of waste across the country—look at the situation at Hanford. So as a result of 40 years of the deterrent production—so the American people, who do not really know what a millirem is, they do know how to read a paper and say that these are problems.

The Department of Energy now is trying to get over that by demonstrating that we can open the Waste Isolation Pilot Plant, we can get Rocky Flats on its feet and do it with wide open relationships with the States, and their officials and their oversight bodies, the same at Savannah River, and by doing that I think we are going to erase a lot of this negativism that sits there now.

I can understand Americans' unease. I certainly was uneasy taking over this Department in terms of what I saw and what I found, but I believe we have corrected that. I said it would take 2 years to get the culture turned around. We have done it. So I think we are the last shoe to drop on this thing, to say let us get on with this thing now and do it right.

We think we are doing it right. We have got a good program. It is well-managed by Dr. Bartlett. We have got the Negotiator on board. Everything the Congress said to do, we have done and we are ready to move on to that site today. We were ready in January, and we are certainly ready by January of 1992, when we predict

that we will get through the political hurdles with the help of the Congress and get on with it.

Senator WELLSTONE. I guess my final comment, I just read the other day about the story at Oak Ridge, where there is a disturbing story about incidence of leukemia. I think—and again, what you say you say with a lot of power. I think this distrust has real implications for whether or not—I mean, I think it has to be overcome.

Part of the National Energy Strategy which you brought before us really does anticipate a number of—I mean, I do not know what the exact figure is, but several hundred new generating plants. My feeling—you mentioned the word "negativism" and maybe that is what it is, but my feeling is that to a certain extent, given the history, people have every right not to believe "the experts."

Secretary WATKINS. Sure.

Senator WELLSTONE. And people have every right to say, when it comes down to this question where the burden of proof is, we are conservative. In other words, if in doubt—even the slightest doubt—do not go forward, as opposed to, well, you know, the evidence is ambiguous so you go forward.

Well, a lot of people are saying, if the evidence is at all ambiguous you do not go forward, and I think what is out there in terms of the mood has got real implications.

Secretary WATKINS. But we are asking, Senator Wellstone for the opportunity to let all the scientists, including State scientists and oversight—including the congressionally-mandated oversight board, the Nuclear Waste Technical Review Board, to be in on this and have a wide open scientific discussion, peer review, the whole business.

So we are not asking to race in at some high pace. It was mentioned this morning that we were going too fast. I mean, it has been 11 years now, so I do not think we are going too fast. I think we are trying to do this in a very responsible way, and we will answer a lot of those questions.

But because nobody is going to be down in this hole, I do not think we should relate this to the Oak Ridge experience on low level radiation and leukemia linkages, which are only at the embryo stage of really understanding that. We have much more study to do before we draw conclusions from that, that all of a sudden we have a new ball game in low-level radioactivity, which really is not applicable to the discussion here on this particular site work.

Senator WELLSTONE. I guess my last question is, I am also talking about the siting of the power plants. I think it has got real implications on whether you will be able to site these or not.

The CHAIRMAN. You know, at the same time, you have got to talk about the risk of alternatives.

What about global warming? I mean, you have got a huge amount of scientific opinion out there that says we need really to do something about global warming, that threatens the very existence of the southern part of my State, the economy of the country, the welfare of the world. What about the burning of fossil fuels? What about the number of cancers caused by those?

I mean, you know, if you want to just go to nuclear power and say there is a questionable study about after 40 years whether or

not people exposed to low levels of radiation can contract leukemia, if you accept that as being true, you must also—if that is a reason to do away with nuclear power, then we certainly would do away with coal mining, with thousands and thousands of mining deaths during that same 40 years. You would do away with the gasoline-powered internal combustion automobile—you know, we could not move society forward.

What we have got to do is get the best acceptable risks and make our choices. It is not enough just to say well, some people there have an emotional reaction to this, or scientific theory over here—I mean, we have got to move the process forward.

Senator WELLSTONE. Mr. Chairman, I know exactly what you are trying to do with your leadership on this committee, and I think that developing a credible national energy policy—you have taken the leadership on it. National security is public interest. I know we are looking for the right mix. I understand that full well. In my way of thinking, there are lots of ways of becoming more energy independent, and I think we all have our own ideas. My only point was—I am trying to keep an open mind. My only point was, it is not going to be easy to site 250—250 nuclear power plants in this country. I am just being straightforward about that.

Secretary WATKINS. I am not sure about that number, Senator Wellstone. We are talking about a nominal doubling over the 40 years of the current number of 112, so you are talking about another 100 plants in 40 years as a possibility.

Nobody knows if that is a reality or not, but we are trying to set the groundwork, to not discard nuclear for the future, including the extended lives of the current plants that now give us 20 percent of our electrical generation capacity.

As the Chairman said, we are going to have to find alternatives if we are going to have growth in the Nation. We cannot just pull out and run away from nuclear. We may have to go to coal, and that may be good for the coal producers but it may not be so good to meet the congressional objectives in the Clean Air Act and the downstream global warming threat that we do not know enough about now.

But we have taken the position in the energy strategy, we are moving in the direction that holds greenhouse gas generation to 1990 or below levels, so that is an outcome of our strategy, and a lot of that has to do with the fact that we keep nuclear power in there at 20 percent of the electrical generating capacity. Not more than that. We are not pushing nuclear at the expense of everything else. We are saying, you better keep it, because it is an option, and you better not lose it, and we will lose it if we are silly about the science.

We want to get serious about the science, get the best in the world. We want to find out whether we can do a thing like this. We do not know the answers, and it seems to me the State of Nevada should applaud that, if in fact they feel it is going to fail. They should applaud—come on, let us get the scientists. Then if it fails we will throw the bums out, and so they will have won. If they feel so sure about it, then let us get on with the research.

Senator WELLSTONE. I think I should let you—I mean, I think there are other—coal-nuclear is maybe not the only trade-off.

Again, we are trying to think about the mix. I think you should have the last word, and you just had a strong one. I will not say anything else for now.

Thank you.

The CHAIRMAN. Let me just say the last word on this.

[Laughter.]

Senator WELLSTONE. You know, I knew that was going to happen, and now I know I will not get the last word.

The CHAIRMAN. What the Admiral is testifying about at Yucca Mountain is not about 240 additional nuclear plants, it is about those we have here and now. It is about making a law that is the law of the land work against a very clearly ardently expressed intention.

If there was ever any doubt about whether Nevada intended to frustrate the process, in all goodwill and in all admiration for their great delegation, they have made it clear today. All we are talking about today is whether or not the Admiral's request to us should be granted so that we may move forward with a scientific process to determine whether or not it can be done safely. It seems to me the Admiral has made a heck of a case for that.

Senator WELLSTONE. Mr. Chairman, you get the last word.

The CHAIRMAN. Senator Craig gets the last word.

Senator CRAIG. Thank you, Mr. Chairman. That is rare on this committee, and I do appreciate it.

Admiral, I apologize. I had to step out. As you know, this committee and a good many others beyond it are watching very closely the process and the procedure, what is going on as we work our way toward the development of a permanent repository for these types of substances, I guess is what I would prefer to call them nowadays. Some people like to rush to judgment and call them wastes, and we know that there is a substantial difference.

I have no specific questions, other than to remind you that we are all very concerned that we move as expeditiously as we can and that we do strike the necessary balance that is important between what is a State's responsibility and, of course, the responsibility of the Federal Government on this particular issue.

I can at least say to date, in watching it, that I have been appreciative of the efforts on the part of the Department and the progress that has been made. I wish that it could move quicker.

Secretary WATKINS. Senator Craig, may I just in response to that briefly say that I know that the statement was made this morning that somehow they have not been given any oversight monies. That is not true. Since 1988, they have received $25 million, and since I have been here they have received about $12.5 million. Those have been made available to the State. That is a lot of money for scientific oversight.

Congress withheld about $6 million last year because it was not going to continue to provide oversight money for something there was nothing to oversee, and I agree with that.

I think that now, if we can get on with a cooperative effort with the State, that surely those monies will flow to the State and give them all the independent and objective oversight, with competent scientists to watch over the shoulders of those really doing the

work, with additional oversight by the congressionally-mandated technical review panel, which is there all the time.

We do not own them. They are owned by the Congress of the United States and some of the best talent in the world on these kinds of things.

So I believe there is some misconception this morning that somehow we are withholding moneys that were properly allocated by the Congress. That is not true, except for $6 million, for the reason I think the Chairman mentioned this morning.

So I want to say that we have really tried to put our best foot forward. So when they talk about not cooperating, that means that somehow I have not stood up and said we should come out of Nevada and reopen the whole Nuclear Waste Policy Act of 1982, as amended, and that is not my responsibility to do that. I have been told by the Congress to get on with this thing, and that is what I am trying to do.

Senator CRAIG. Well, Admiral—Secretary, I appreciate you bringing that forward. The intent of my question was, I think, obvious at the time.

I think all of us recognize that oversight money has been provided, but sometimes in lack of having the right wherewithal, if you will, or the necessary issues to argue something, you argue something a little differently. I guess there is a bit of, in this business, as sometimes I have suggested to political leaders in my State, that sometimes good politics is awfully bad policy.

I recognize the good politics of what the Governor of Nevada and that delegation is doing at the moment, but I clearly question the policy, or the end result that could occur, because I think what is good policy for this country right now is for all of us to come to our senses as it relates to nuclear energy and the necessary handling of the byproducts of the materials of it.

When we all come into that sense, then that is good politics combined with good policy, but right now that does not seem to be the case because of a tremendously high level of misinformation and lack of understanding of what it is that we are about here.

Secretary WATKINS. I agree with that, Senator Craig, and I think one evidence of that is the opening this summer of the Waste Isolation Pilot Plant in New Mexico.

That involves about seven States, and while it is going into an area near Carlsbad, that has been so thoroughly worked over by scientists, blue ribbon panels, the National Academy of Sciences and so forth, that we feel for the first time we are comfortable that we can do a job there on research now, to determine its long-term efficacy for transuranics, the most egregious kinds of wastes from nuclear weapons production.

So we have gone through that, where other States—Idaho, Washington State, Colorado, and others—and California—are the beneficiaries—and Tennessee—of that particular site. So we have already had precedent in the Nation for accepting responsibility and we do everything we can technically to assure that it is scientifically efficacious to do that.

That is all we are trying to do here, and I think this whole not-in-my backyard syndrome is going to have to be faced by the Nation in this decade. This is going to be the decade of waste man-

agement, and we have to do the job on it. Whether it is toxic waste from our cities, whether it is municipal waste, whether it is low-level radioactive waste, all of these things have to be addressed—or medical waste—and they are not simple tasks.

So not only do we have this repository for spent fuel elements on our commercial power plants, this is symbolic of our Nation's will to face the waste issue that we are generating in this country, enjoying the luxuries that we have here and our standard of living, and we have to get on with it, so I think it is a much more powerful project than others might think.

It is not just solely devoted to this. It is symbolic of the Nation willing to get out of the not-in-my-backyard syndrome and share some of the burdens of responsibility on waste, because we have all shared in the enjoyment of our democracy, and I think it is that important. That, to me, is a very fundamental underpinning here of what we are dealing with, and why we have come to the Congress and ask for help.

We think it is that serious. We do not think we are going to make it, otherwise, and we are going to let the American people down and we are going to pass this thing on to our children when we should not. Let us face it and get on with it for these first 112 plants, and let us try to avoid it for the next 112.

Senator CRAIG. Well, Admiral, with that, I will let you have the last word. Thank you very much. It was a good word. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, Admiral.

Dr. Bartlett, Mr. Wakefield, we appreciate your testimony very much.

Secretary WATKINS. Thank you, Mr. Chairman.

The CHAIRMAN. We will finish the morning with a technical panel composed of Dr. Don U. Deere, Chairman of the Nuclear Waste Technical Review Board, and Robert Bernero, who is director of the Office of Nuclear Materials Safety & Safeguards of the Nuclear Regulatory Commission.

Gentlemen, welcome to the committee. I am sorry that we have been delayed getting started. I must ask you, unfortunately, to summarize in about 5 minutes each, because I have an unavoidable meeting I must be at by about 12:20, so if you will proceed, Dr. Deere, first.

STATEMENT OF DR. DON U. DEERE, CHAIRMAN, NUCLEAR WASTE TECHNICAL REVIEW BOARD

Dr. DEERE. Thank you. I have a 5-minute statement, and I think I would like to go over just a 2-minute statement for you.

I am Don Deere, Chairman of the Nuclear Waste Technical Review Board, and on behalf of the entire board I would like to thank you and the committee for the opportunity to speak on this important issue.

The committee asked the board to address two questions:

First. Is the DOE prepared to initiate site characterization activities? In the board's view, the DOE is prepared to begin a progression of site characterization activities as soon as it has gained access to the site. The DOE is ready to expand surface assessment

activities, such as exploratory drilling, trenching, and performing additional environmental and soil studies.

While awaiting site access, the DOE has been able to further refine the design of the underground facilities, including the layout of openings and exploratory tunnels and related underground testing.

In the first and second reports to the U.S. Congress and the U.S. Secretary of Energy, the board recommended that the DOE site characterization program give highest priority to those tests and studies that provide the data necessary for an early determination of site suitability—that is, finding out as soon as possible if there are disqualifying features at the site.

Recent efforts by the DOE have refocused its site characterization program along these lines. The board is in agreement that the DOE should proceed with its assessment of the Yucca Mountain site.

Second. Is there any reason to disqualify the Yucca Mountain site at this time? Given existing data, there appear to be no scientific or technical reasons to abandon the site at this time.

Until site characterization studies, particularly subsurface exploration, including bore holes, shafts, or inclined accesses in tunnels, have progressed sufficiently, it will be impossible to tell whether or not, in our opinion, the site is suitable or unsuitable for repository development. It is conceivable that disqualifying conditions may be identified as the site is being characterized.

Thank you.

[The prepared statement of Dr. Deere follows:]

PREPARED STATEMENT OF DON U. DEERE, CHAIRMAN, NUCLEAR WASTE TECHNICAL REVIEW BOARD

Mr. Chairman and Members of the Committee: I am Don U. Deere, Chairman of the Nuclear Waste Technical Review Board (the Board). On behalf of the entire Board, I would like to thank you and the committee for the opportunity to comment briefly on important issues relating to the proposed site at Yucca Mountain, Nevada. This site is being characterized by the Department of Energy (DOE) for the development of a mined geologic repository for the disposal of commercial spent fuel and defense high-level radioactive waste.

BACKGROUND

Mr. Chairman, as you know, the Board was established by the Nuclear Waste Policy Amendments Act of 1987 to evaluate the technical and scientific validity of the DOE's civilian radioactive waste management program. (A more detailed statement describing the Board and its mission is attached.) Our charge includes the evaluation of activities related to the characterization of the candidate site at Yucca Mountain and to the transportation and packaging of the waste.

As part of its review of the DOE program, the Board has identified many aspects of site characterization and repository development about which questions have been raised. In its two completed reports to the U.S. Congress and the U.S. Secretary of Energy, the Board made a number of recommendations to the DOE in some of these areas and identified subjects the Board wished to explore further.

THE COMMITTEE'S QUESTIONS TO THE BOARD

Today, the Board has been asked by the committee to respond to two questions relating to the Yucca Mountain site. First, is the DOE prepared to begin site characterization? And second, does the Board know of any reason to disqualify the site at this time? On behalf of the Board, I am pleased to respond to these questions.

Question 1. Is the DOE prepared to initiate site-characterization activities?

Answer. In the Board's view, the DOE is prepared to begin a progression of site-characterization activities as soon as it has gained access to the site. The DOE is ready to expand surface-assessment activities, such as exploratory drilling, trenching, and performing additional environmental and soil studies. While awaiting site access, the DOE has been able to further refine the design of underground facilities (including the layout of openings and exploratory tunnels) and related testing programs.

In its First and Second Reports to the U.S. Congress and the U.S. Secretary of Energy, the Board recommended that the DOE's site-characterization program give highest priority to those tests and studies that provide the data necessary for an early determination of site suitability, that is, finding out as soon as possible if there are disqualifying conditions at the site. Recent efforts by the DOE have refocused its site-characterization program along these lines.

The Board is in agreement that the DOE should proceed with its assessment of the Yucca Mountain site.

Question 2. Is there any reason to disqualify the Yucca Mountain site at this time?

Answer. Given existing data, there appear to be no scientific or technical reasons to abandon the site at this time. Until site-characterization studies, particularly subsurface exploration (including boreholes, shafts, and tunnels), have progressed sufficiently, it will be impossible to tell whether or not the site is suitable for repository development. It is conceivable that disqualifying conditions may be identified as the site is being characterized.

It is important to remember that Yucca Mountain has not been chosen as the site for a repository. Rather, it is the single site designated by the Congress for characterization. The Board strongly believes that a candidate site for repository development will have to undergo both surface and underground characterization before its suitability can be adequately evaluated. The critical portion of the data necessary to evaluate the suitability of the Yucca Mountain site has yet to be collected.

CONCLUSION

Mr. Chairman, the Nuclear Waste Technical Review Board accepts its responsibility for reviewing the technical and scientific validity of DOE activities relating to the management of civilian high-level waste. However, there is no question that the resolution of technical and scientific uncertainties is made substantially more difficult by nontechnical problems.

I would like to reiterate that the early evaluation of the suitability of the Yucca Mountain site has been, and continues to be, a prime concern of the Board. From the time it issued its first report, the Board has voiced its concern over the impasse between the DOE and the State of Nevada over access to the Yucca Mountain site.

It is clear that the progress of the DOE's site-characterization activities depends directly on access to the site. Continuing delays in site characterization will result in further cost increases and comparable delays in arriving at both a judgment about site suitability and in moving toward safe management of the Nation's high-level radioactive waste.

Mr. Chairman, this concludes my prepared remarks. I would be pleased to address any questions that you or other members of the committee might have.

[Attachment.]

ABOUT THE BOARD

The Nuclear Waste Technical Review Board (the Board) was established as an independent agency within the Executive Branch of the Federal government by the Nuclear Waste Policy Amendments Act (NWPAA) of 1987, which was signed into law on December 22, 1987.

The Board is charged to evaluate the technical and scientific validity of nuclear waste disposal activities undertaken by the Secretary of Energy, including:

(1) site-characterization activities, and

(2) activities related to the packaging or transport of high-level radioactive waste or spent nuclear fuel.

The Board is required to report its findings, conclusions, and recommendations no fewer than two times each year to the U.S. Congress and the Secretary of Energy. The Board's first two reports were released in March and November 1990, respectively. Its third report will be released in May.

The Board conducts its evaluation through discussions; briefings to both the full Board and its panels; reviews of Department of Energy (DOE) studies; review of se-

lected literature by members and staff; and through participation in field trips. Four full Board meetings and 10-12 panel meetings and technical exchanges are held each year.

At full strength, the Board is composed of 11 members who are eminent in a field of science or engineering, including environmental sciences, and are selected solely on the basis of distinguished service. The law stipulates that members shall represent a broad range of scientific and engineering disciplines related to nuclear waste management. Members are appointed by the President from a list of candidates recommended by the National Academy of Sciences. The Board members serve part time for terms of four years.

Support for the Board's activities is provided by about ten senior professionals and 12 administrative staff, located in Arlington, Virginia.

The CHAIRMAN. Thank you very much, Dr. Deere.

Mr. Bernero.

STATEMENT OF ROBERT M. BERNERO, DIRECTOR, OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS, NUCLEAR REGULATORY COMMISSION

Mr. BERNERO. Mr. Chairman, I would like to enter my statement into the record, but just paraphrasing it, speaking directly to the two questions you have raised in your letter:

By the end of July 1989, we had reviewed the DOE's site characterization plan for Yucca Mountain and found serious objection to certain aspects, although we found the plan was a usable one.

Since that time, our interactions with DOE, and based on our technical and quality assurance reviews, we have concluded that they are now ready to start surface-based testing at the Yucca Mountain repository, and these areas of readiness are in areas of high priority for research at the Yucca Mountain site.

To turn to the other question you asked—that is, is there anything to disqualify the site?—we have looked very carefully at all of the data available to date and satisfied ourselves that the site characterization plan promises to respond, to answer the questions raised about the site. We see nothing here that would disqualify the site at this time.

[The prepared statement of Mr. Bernero follows:]

PREPARED STATEMENT OF ROBERT M. BERNERO, DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS, NUCLEAR REGULATORY COMMISSION

Good morning Mr. Chairman, I am Robert M. Bernero, Director of the U.S. Nuclear Regulatory Commission's (NRC's) Office Of Nuclear Material Safety and Safeguards. I would like to thank you for the opportunity to present the NRC's views on the technical and regulatory issues of importance to a potential geologic repository at the Yucca Mountain site.

In December 1988, the U.S. Department of Energy (DOE) issued the Yucca Mountain Site Characterization Plan (SCP), in preparation for site characterization at the Yucca Mountain site. By the end of July 1989, the NRC staff completed its review of the SCP on schedule and concluded that the plan was usable, but raised two objections to DOE starting work on the site and provided a number of major comments. The two objections, regarding DOE's quality assurance (QA) program and the Exploratory Shaft Facility (ESF), both stood as obstacles to starting site characterization work. The two objections were (1) a qualified QA program was not in place for site characterization activities and (2) DOE had not demonstrated the adequacy of the design control process under which the ESF was prepared nor the adequacy of the design itself.

The DOE acknowledged the objections and continued to work toward resolution of the QA objection. Regarding the ESF, further questions were raised by the Nuclear Waste Technical Review Board (NWTRB), and DOE undertook a major study to re-evaluate the ESF design. Once the QA objection was acceptably resolved, DOE site characterization might have begun by performing some surface-based testing. How-

ever, the State of Nevada opposes site characterization and has effectively blocked site work.

In this phase of preapplication review and site characterization, DOE has the responsibility to address and resolve objections before proceeding with its work. Because our objections are obstacles to DOE starting site characterization work, we have been giving particular attention to reviewing DOE's progress toward resolving them and will recognize, as warranted, the resolution of the objections.

Regarding our objection on QA, DOE has been making considerable progress toward resolution. To date, there has been partial closure on several of the particulars involved in the QA objection. For example, we have been conducting reviews of the detailed QA programs for DOE and its contractors. This review is divided into an evaluation of the QA program plans, which provide a description of the program, and an evaluation of effectiveness in program implementation. To conduct its evaluation of effectiveness, the NRC staff observes the DOE audits and surveillances conducted at all major organizations participating in the site characterization program. The NRC staff has concurred with DOE's findings that two DOE contractor programs are acceptable for new site characterization activities, four DOE contractor programs are acceptable for new site characterization activities with some exceptions, and the DOE Headquarters and DOE Yucca Mountain Site Characterization Office programs are acceptable to begin limited new site characterization activities in Midway Valley.

We have also reviewed two of DOE's study plans which are the detailed technical plans necessary for DOE to begin the early site characterization activities in Midway Valley. Based on our review, we have no technical objection to DOE initiating these studies as planned. Therefore, both our technical and QA reviews have resulted in no objection to DOE initiating the early site characterization studies in Midway Valley.

With respect to the ESF objection, DOE is conducting a study of alternatives to the ESF design in the SCP and is scheduled to select a new design later this year. We met with DOE in January 1991, to discuss a number of specific concerns related to our objection. The meeting enabled us to gain a better understanding of what DOE was doing in this area, especially with regard to the identification and incorporation of regulatory requirements. Based on interactions with DOE, it appears that DOE is adequately considering the NRC staff concerns in its alternatives study. However, before NRC can draw a final conclusion, it will have to review DOE's formal submittals on the objection. We expect to review the DOE results promptly and to recognize resolution of our objections if warranted.

In addition to DOE's response to the two NRC staff objections, DOE also responded in December 1990, to the other comments we made on DOE's SCP. We have been reviewing this response and our impression is, as we expected, that DOE's response primarily describes how DOE will address the staff's comments in its future site characterization work rather than actually resolving comments at this time.

It is our conclusion that DOE has made significant progress toward resolving our two objections. From our perspective, it appears that once DOE receives the necessary permits it can begin site characterization work in limited areas. In particular, we have no QA or technical objection to DOE starting limited site characterization work in Midway Valley. Furthermore, we consider that moving ahead with these and eventually other site characterization studies is necessary to resolve the technical questions about the acceptability of the Yucca Mountain site.

This concludes my statement. Mr. Chairman, I am prepared to answer any questions that you and the Committee may have.

The CHAIRMAN. Both of you are saying, in effect, that you cannot make that decision at this time without characterizing the site?

Dr. DEERE. Correct.

Mr. BERNERO. That is right. We need the information.

The CHAIRMAN. Now, gentlemen, let me ask you this. Admiral Watkins has asked us for legislation that would give EPA, as opposed to the State of Nevada, the authority to issue these various permits. I think you have got an air permit, water, et cetera.

Now, while you are not supposed to be experts in air and water, you may be, I do not know, but you certainly know about characterization and what it involves. My question is, and I think you can answer it, is the characterization of the site and the kinds of per-

mits that would be needed, just the characterization, not the storage of waste, are those such vital decisions to the State that they are likely to, I mean the issuing of an air permit or a water permit, that they are likely to threaten the safety and health of the people of Nevada?

Mr. BERNERO. I would say that the environmental impacts of the sort associated with these permits, the air emissions or the water contaminations, since they involve disturbance of existing rock formations at the site, are relatively ordinary environmental impacts and do not pose the serious questions that actual waste storage there or disposal there would pose.

The CHAIRMAN. Would you agree with that, Dr. Deere?

Dr. DEERE. I would agree.

The CHAIRMAN. Certainly, everyone agrees that the storage of nuclear waste is a major action involving major decisions. But I think you put it very well, Mr. Bernero, just characterization of this site, if you went and characterized and it was found not to be a suitable site and you moved off, would hardly constitute an environmental insult to this area. We can say that with a fairly high degree of scientific confidence, can we not?

Mr. BERNERO. Yes, I believe so. It is very similar to authorizing a mining operation right there.

The CHAIRMAN. Senator Craig.

Senator CRAIG. I have one question. Gentlemen, thank you very much. Mr. Bernero, it is interesting that you would characterize it like the permitting or the authorizing of a mining operation. I have been looking at it and watching it with those kinds of observations. In fact, I saw an interesting display out at a Northwest Mining Conference in Denver recently of the site and the work that has gone on to date. So, even they view it from a geological point of view and formations and studies, points of view similar to that.

Representative Bilbray, this morning, made a statement that concerns me. And he stated that an NRC geologist, John Trapp, stated that Yucca Mountain would never be capable of gaining approval of NRC. Now, I trust that the statement was made, but I am curious in what context it was made, and what was meant by that kind of statement. Are we talking geologically? Are we talking standards? I know EPA standards are extremely stringent here. In what context was that made?

Mr. BERNERO. Well, let me speak to that. John Trapp is in our staff at the NRC, he was then and still is. And during the review of the site characterization plan, he composed an internal memorandum in which he ruminated on the subject of volcanism at the site. There are volcano cones evident all around the site.

And he hypothesized a scenario or a model for volcanic disruption of the site with certain rather pessimistic traits in his modeling. And he drew the conclusion within that memo, that it appeared that there would be a need for very great investigation and a lot of argument about whether or not this site would ever be acceptable from that aspect. From the aspect of volcanic disruption. And he expressed his personal opinion that this suggested perhaps we should look at another site, that this promised to be an endless scientific debate about volcanism.

Dr. Trapp has participated in the review of the site characterization plan since that memorandum and Dr. Trapp has agreed that the site characterization plan is designed to get that information necessary to engage in the scientific debate on acceptability.

And the Department of Energy, which was given that memorandum shortly after it was generated, has not accepted Dr. Trapp's personal judgment, that one could judge the site as not suitable with the limited information we have today.

So, the context of the statement is, that it was an individual, an expert opinion. He is a geologist. He is not really a volcanologist. But very experienced in the basin and range province, and he expressed an opinion about the outcome of competent scientific investigation. But he has also expressed the opinion that the plan to gain the scientific information is adequate.

Senator CRAIG. So, I guess I could react to that in a variety of ways. First of all, I find it very favorable that you are allowing the scientists at hand to speak openly and to react to it with professional judgment and some hypothesis.

Now, I am also hearing from you that since that time and since the expression of that concern, the process has gone forward with the incorporation of the study of the volcanic, potential volcanic activities and volcanic characteristics of the area. That is correct?

Mr. BERNERO. Oh, yes indeed. Yes, indeed. I applauded Dr. Trapp at the time and still do, for showing a healthy skepticism. We do not know that Yucca Mountain is acceptable. And we have, in our comments to DOE, emphasized that——

Senator CRAIG. You mean there are no foregone conclusions that this will in fact become the site?

Mr. BERNERO. Absolutely not.

Senator CRAIG. Thank you.

Mr. BERNERO. We have emphasized to the Department of Energy that their earlier investigation should focus on, what some people prefer to call show-stoppers, the issues that are potentially disabling or disqualifying. And volcanism is one of them.

The Szymanski hypothesis for water movement is another. And some of the earlier site characterization, which the Department is now ready to conduct, the calcite silica investigations in trench 14, speak directly and only partially, I might add, to that Szymanski hypothesis.

Senator CRAIG. Thank you gentlemen. Thank you both very much. Mr. Chairman.

The CHAIRMAN. Dr. Deere, Mr. Bernero, thank you very much for you testimony.

[Whereupon, at 12:15 p.m., the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Question

THE SECRETARY OF ENERGY,
Washington, DC, April 29, 1991.

Hon. J. BENNETT JOHNSTON,
Chairman, Committee on Energy and Natural Resources, Washington, DC.

DEAR MR. CHAIRMAN: This is in response to your letter of March 22, 1991, in which you posed a number of followup questions resulting from the Committee on Energy and Natural Resources oversight hearing on March 21, 1991, regarding the civilian radioactive waste management program. The answers to your specific questions are enclosed.

I appreciated very much the opportunity to appear before your Committee to state, for the record, my belief as to the importance of moving forward with the scientific investigation of the Yucca Mountain site. The Department is ready to move forward. Both the Chairman of the Nuclear Waste Technical Review Board and the Director of the Office of Nuclear Materials Safety and Safeguards of the Nuclear Regulatory Commission testified to our readiness to proceed. In addition, both of them unequivocally said that there is nothing to indicate that the Yucca Mountain site should be disqualified at this time. Further, both of them agreed that no final site suitability decision could be made without actually conducting the scientific investigation program that is planned.

The only thing holding the Department back is the absence of appropriate environmental permits that are the responsibility of the State of Nevada to issue. The State, in the face of a recent Supreme Court decision, has now indicated that it will process the permit applications. The track record, however, leads me to believe that the State will continue to take every opportunity to delay and frustrate the program to prevent it from making progress. Indeed, the testimony you heard on March 21 from Governor Miller and Nevada's congressional delegation reinforced that view. I believe, in light of that, it is essential for Congress to affirmatively consider section 511 of the National Energy Strategy Act (S. 570).

I look forward to working with you on this issue, as well as others, that are critical to our Nation's energy future.

Sincerely,

JAMES D. WATKINS,
Admiral, U.S. Navy (Retired).

[Enclosure.]

QUESTIONS FROM SENATOR JOHNSTON

Question 1: Does this (the request by the State of Nevada to resubmit permit applications) give you encouragement that Nevada will now operate in good faith to issue these permits?

Answer: The Department is encouraged by the invitation from the State of Nevada to resubmit the applications and is further encouraged by the actions taken by the U.S. District Court at Las Vegas on March 20, 1991, with respect to the permit applications. I sincerely hope that the State is serious about treating the Department equitably and issues the permits in the timely manner which the District Court has prescribed. These permits are absolutely essential to the schedule we have established to begin start of new scientific investigation activities at the Yucca

Mountain site. Should these, and other, permits not be issued in the timeframe anticipated, the Department will not be in a position to start construction of the Exploratory Shaft Facility. This facility is key to our understanding of the site's potential performance should it be selected as a repository.

Governor Miller, in his testimony before your Committee on March 21, 1991, indicated that the permit applications would be processed in "good faith." I am concerned, however, that based on its record and the overall thrust of the testimony of its representatives, Nevada will not process these permit applications as expeditiously as it processes other permit applications from commercial interests in the State. As I noted in my testimony, we will be monitoring the State's actions and will keep the Committee apprised of our progress.

For your information I am enclosing, for comparison purposes, a fact sheet relating to the Bond Gold mine. This is an operating gold mine located approximately 15 miles northwest of Yucca Mountain. Of importance here is that the surface disturbance air quality permit was issued in 3 months; the water appropriation permit in 9 months. This is for a site that, when developed, will exceed 2,800 acres and will use 7.5 billion gallons of water over a 7-year period. This compares to Yucca Mountain which is 465 acres and will, given the current Exploratory Shaft Facility configuration, use only 131 million gallons of water over 7 years.

[Enclosure.]

BOND GOLD MINE

Bond Gold Bullfrog, Inc. (Bond Gold) is an operating gold mine 100 miles north of Las Vegas, 5 miles west of Beatty, and 15 miles northwest of Yucca Mountain.

Bond Gold began operation in 1988 and plans to process 14,300,000 tons of ore over the next 5 years using a vat leach process.

Bond Gold has received environmental permits from the State of Nevada for a much larger project than DOE plans for site characterization.

For comparison:

- Land Disturbance
  - Bond Gold—2,800 acres (657 acres currently)
  - Yucca Mountain—465 acres
- Water Use
  - Bond Gold—22,582 acre feet/7 years (7.5 billion gallons)
  - Yucca Mountain—402 acre feet/7 years (131 million gallons)
- Facility acreages:
  - Processing Activities—125 acres
  - Lined Tailings Pond—85 acres (plastic liner)
  - Ore and Tailings Pond—200 acres
- Time required for permit approvals:
- Air Quality Permit
  - Application Submitted—5/88
  - Application Approved—8/88
  - Amendment Requested—5/89
  - Amendment Approved—6/89
- Water Appropriation Permit
  - Application Submitted—2/88
  - Application Approved—11/88

Question 2: Will this address all of the permits required for site characterization?

Answer: No. At this time, the Department has only applied for three permits (surface disturbance (air quality), underground injection control, and water appropriation). These permits are for a limited purpose. Issuance of these permits will allow the Department to initiate new surface-based scientific investigation activities (i.e., Midway Valley and trench 14) and to start site preparation for the Exploratory Shaft Facility.

The litigation before the U.S. District Court at Las Vegas addresses only those three permits. There are a minimum of 15 additional permits required. Additional permits, above and beyond these 18, may be required depending upon interim site characterization findings and characteristics of the potential repository design. Some of those permits will have to be renewed periodically. Each of those additional permits affords the State opportunities to further delay the process through both administrative action and litigation.

Moreover, although we still have not seen how the State is actually going to treat the administrative processing of the first three permit applications, I am apprehensive that the State will look for reasons to deny issuing the permits. This would then force us back into litigation, and might well require us to enter into an admin-

istrative appeals process before we could even seek relief from the U.S. District Court at Las Vegas. This would be extremely time consuming. And, as I noted, these are only the first 3 of over 18 permits we will require. If the Department has to follow this process for each and every permit, it likely will be long, costly, and frustrate Congress' intent, set forth in the Nuclear Waste Policy Act of 1982, as amended, to have a geologic repository completed by the early part of the 21st century.

Question 3: Do you have any reason to believe that the state will not avail itself of the same opportunities for litigation for those permits?

Answer: I would like to think that the longstanding impasse between the Department and the state of Nevada has been put behind us as a result of the unanimous Ninth Circuit Court of Appeals decision, the recent Supreme Court action with respect to *Nevada* v. *Watkins* and the March 20, 1991, ruling by the U.S. District Court at Las Vegas in *United States* v. *State of Nevada.* However, I believe that, in light of the thrust of the testimony of Governor Miller before your Committee on March 21, 1991, there is a high probability of continued litigation at every opportunity that presents itself to the State.

Should the State engage in a delaying strategy through litigation, it could take as long as 6–8 years, and perhaps longer, to resolve the various lawsuits. That is patently unacceptable and would frustrate the will of Congress as set forth in the Nuclear Waste Policy Act of 1982, as amended. We need to establish, as soon as possible, the suitability or unsuitability of the Yucca Mountain site as a potential repository for spent nuclear fuel. Any further delay in the scientific investigation of the Yucca Mountain site would do untold damage to our ability to preserve the nuclear power option in this country.

Question 4: In this same letter, you indicate that the impasse at Yucca Mountain cannot be allowed to continue for very long before Congress must step into it. You state, and I will quote,

> If . . . we are serious about studying the Yucca Mountain site, then the Department must have all the tools it needs to complete that task. If we are not serious about studying Yucca Mountain, then we must go back and look at alternative sites for a repository and place renewed emphasis on the siting of a monitored retrievable storage facility.

Does the Department have a contingency plan for either looking at alternative sites or for placing greater emphasis on the need for interim storage at an MRS?

Answer: The Department recognizes that we have an obligation to solve this problem and find a permanent solution to the disposal of nuclear waste. Congress has given the Department a mandate and specific guidance in the Nuclear Waste Policy Act of 1982, as amended. We have, despite vigorous opposition from the State of Nevada, made considerable progress. The Department is fully prepared to conduct the scientific investigation of the Yucca Mountain site and determine its suitability or unsuitability for development as a repository, if we can reasonably obtain the approvals to initiate such action.

The Department prefers to site an MRS facility through negotiations with a volunteer host. The Department believes that external efforts, such as those of the Nuclear Waste Negotiator, afford the best opportunities to solicit interest in and negotiate an agreement with a volunteer host to site an MRS facility.

Question 5: How would the Department begin the process of looking for an MRS site? Will you go back and look at some of the same sites that were considered several years ago?

Answer: The Department believes that the preferred approach to siting an MRS facility is through the efforts of the Nuclear Waste Negotiator. However, the Department will be prepared to implement contingency activities should it appear that the Nuclear Waste Negotiator's efforts might prove unsuccessful. Such activities could include a review of sites considered several years ago.

Question 6: Doesn't the impasse in Nevada force the Department to move more aggressively toward finding a suitable MRS site?

Answer: The Department is committed to begin accepting spent nuclear fuel at an MRS in 1998, 12 years ahead of the current schedule of 2010 for the start of repository operations. While the State of Nevada's recalcitrance in processing permit applications underlines the need to continue to move forward aggressively in developing an MRS, it does not directly affect the Department's timetable for the MRS because we anticipate legislation being enacted to eliminate the linkage between the MRS schedule from the repository schedule contained in the Nuclear Waste Policy Act of 1982, as amended.

The impasse in Nevada, however, may make it more difficult to move forward with the MRS in that it could lead to a public perception that, in the absence of progress with respect to a repository, an MRS may become a de facto repository. It

will be especially critical to ensure that the legislative initiative contained in the National Energy Strategy Act to delink the MRS schedule from the repository schedule is not misunderstood by potential host States or Indian Tribes.

Question 7: If the impasse at Yucca Mountain continues, will the Department ultimately have to go back and look at alternate repository sites?

Answer: Yes. If Nevada is allowed to be successful in keeping the Department from carrying out the mandate of Congress and we cannot scientifically investigate Yucca Mountain to determine its suitability, I will be left no alternative but to go back to Congress and recommend that we look at other sites. We are not at that point yet, but we need Congress to enact section 511 of the National Energy Strategy Act to avoid that possibility. The provisions contained therein will permit us to carry out the congressional mandate.

Question 8: How will the Department meet its 1998 commitment to take title to spent fuel? It is necessary to have an MRS to do that?

Answer: The Department is committed to initiating acceptance of spent fuel at an MRS in 1998. That commitment makes it extremely important that there be legislation to eliminate the linkage between the MRS and repository schedule. The Department believes that, should the Nuclear Waste Negotiator have a volunteer site approved by Congress by the end of 1992, we can have an MRS operational by 1998 ready to accept spent fuel from the utility contract holders. Other options that would enable the Department to accept spent fuel by 1998 may have to be considered. An MRS facility is, however, a necessary and vital component of the integrated radioactive waste management system and would be the preferred way to initially accept spent fuel pending ultimate disposal in a repository.

Question 9: In light of the testimony given by the State of Nevada at the March 21 hearing, and in light of Governor Miller's statement that the state would begin to process the permit applications submitted, do you believe that legislation such as that included in S. 570 is still necessary?

Answer: Yes. In light of the statements made by the Governor and affirmed by the Nevada congressional delegation at the March 21, 1991, hearing with respect to their continued unyielding opposition to the Department's activities at the Yucca Mountain site, I can only conclude that the legislation provided for by section 511 of the National Energy Strategy Act (S. 570) is essential if the civilian radioactive waste management program's efforts to scientifically investigate the site at Yucca Mountain are to be completed without further hindrance from the State.

I support that legislative initiative without reservation.

Question: In testimony provided to the Committee on March 21, Nevada Governor Miller stated that the Department has never provided substantive response to Nevada's technical analyses supporting its assertion that the Yucca Mountain site should be disqualified nor has the Department provided any technical basis for refuting that assertion. Governor Miller's testimony also stated that the Department has not responded to Nevada's substantive technical comments on the site characterization plan.

In sum, the State of Nevada appears to believe that sufficient technical data and analyses exist now to disqualify the site from further consideration.

Please respond to these assertions.

Answer: The Department has, in fact, reviewed the State of Nevada's analyses that purport to show that the site at Yucca Mountain should be disqualified from further consideration for development as geologic repository. The evaluations performed by the Department have consistently indicated that the State's conclusions about disqualifying the site are not valid. Results of these evaluations have been presented at a number of Nuclear Waste Technical Review Board meetings. The Department, therefore, does not believe that the available evidence supports a finding in accordance with 10 CFR Part 960 that the site should be disqualified.

This position is fully supported by the Chairman of the Presidentially appointed Nuclear Waste Technical Review Board and by a senior representative of the Nuclear Regulatory Commission and was affirmed in their testimony before the Senate Committee on Energy and Natural Resources on March 21, 1991. I would also like to underline that they believe, as does the Department, that additional data is required to be collected and analyzed before final determinations are made on any of the factors the State has pointed to as grounds for disqualification. I have attached an assessment performed by the Department related to the specific assertions made by the State with respect to the disqualification of the Yucca Mountain site (Attachment 1). This assessment has also been transmitted to the State for its information. The Department will continue to evaluate the suitability of the Yucca Mountain site as data becomes available.

The technical issues raised by the State of Nevada are among the acknowledged uncertainties concerning the characteristics of the Yucca Mountain site. The Department believes they will be addressed and resolved when the relevant studies as defined in the Site Characterization Plan (SCP) are completed. That basic point was made in a letter that Secretary Watkins sent to Governor Miller on February 28, 1990. A copy is attached (Attachment 2).

As was noted, the Department has made detailed presentations to the Nuclear Waste Technical Review Board, with State of Nevada representatives present at every instance, on issues associated with two of the areas (tectonics and groundwater travel time) that the State of Nevada believes should be the basis for disqualification of the Yucca Mountain site. The briefings have been on hydrologic properties, Calico Hills Risk-Benefit Analysis, site suitability, volcanic hazards, and seismic hazards. With respect to the third issue, human intrusion, which would most likely be the result of exploration for minerals, the State of Nevada's Bureau of Mines and Geology, in a report dated December 1989, indicated that, based on its review, mineral potential at the Yucca Mountain site was very low. This is in agreement with section 1.7 of the SCP which also concluded that potential for oil and gas at the Yucca Mountain site was low.

With respect to Governor Miller's assertion that the Department has not responded to the State's comments on the Site Characterization Plan (December 1988), the Department has in fact responded to those comments that related to the technical studies that the Department planned to initiate first at the Yucca Mountain site. Specifically, we have provided our response to 23 State comments on the Midway Valley trenching activity as well as the proposed calcite silica investigations. In addition, we have also responded to 58 State comments that related to the Exploratory Shaft (now Studies) Facility (ESF). These latter comments were submitted separately from the State's SCP comments.

The Department has responded fully to 929 State comments on the Consultation Draft Site Characterization Plan (January 1988). In our review of the 1,917 State comments on the SCP itself, we found that the State, as they had conceded in their transmittal letter, had resubmitted without change many of the same comments that they had submitted on the Consultation Draft SCP. This factor reduced substantially the priority that was placed on preparing responses to comments on issues other than those related to planned near-term program activities such as Midway Valley, calcite-silica, and the ESF.

Our current schedule calls for all State comments on the SCP to be responded to by September 1991.

[Attachment 1]

ASSESSMENT OF THE STATE OF NEVADA—LETTER OF NOVEMBER 14, 1989

On February 28, 1990, the Secretary of Energy responded to a letter of November 14, 1989, in which the State identified several concerns related to the geotechnical suitability of the Yucca Mountain candidate site. As a result of testimony by State representatives at the March 21, 1991, oversight hearing of the Senate Energy and Natural Resources Committee on the Yucca Mountain site characterization program, the Office of Geologic Disposal has been requested by the Director of the Office of Civilian Radioactive Waste Management to conduct a further assessment of the information presented by the State of Nevada in the November 14, 1989, letter from the governor to the Secretary of Energy. This letter included a description of three factors relating to the geotechnical suitability of the Yucca Mountain candidate site, where the State concludes that the current information should cause the site to be disqualified from further consideration. The three technical factors or areas of concern are: the potential for human intrusion, tectonics (the possibility of both faulting and volcanism), and groundwater travel time. The DOE's present technical assessment of these three issues is presented below and preceded by some general observations regarding the State's comments.

The evaluations performed by the DOE have consistently indicated that the State's conclusions about disqualifying the Yucca Mountain candidate site are not valid. The available evidence does not support a finding in accordance with 10 CFR Part 960 that the site should be disqualified. The DOE has concluded that additional data from site characterization are necessary to further address these issues.

The assertions presented by the State in the letter of November 14, 1989, are similar to concerns expressed in comments on the Environmental Assessment, the Site Characterization Plan/Consultation Draft (SCP/CD) and the Site Characterization Plan (SCP). These concerns were considered in preparation of the SCP. The DOE's

most recent responses to such concerns were provided in October 1989, as specific responses to the State's comments on the SCP/CD, and in December 1990, as responses to the State's comments on the SCP that were related specifically to studies of faulting and the significance of calcite-silica deposits (the first field studies to be conducted once permits are received). Responses to the remainder of the State's detailed comments on the SCP are scheduled to be completed by late 1991. A further assessment of the issues raised in the November 14, 1989, letter is presented here in light of the State's testimony at the March 21, 1991 hearing. In all cases, the DOE has acknowledged the legitimacy of the concerns expressed by the State and others, and believes that the site investigation program defined in the SCP will provide the information needed to determine the validity and significance of the concerns. It is important to note that, while other parties (U.S. Nuclear Regulatory Commission, Edison Electric Institute (EEI), Department of Interior-U.S. Geological Survey, Nuclear Waste Technical Review Board) have raised technical issues in reviewing the DOE's plans, no other organization has come to the conclusion that the Yucca Mountain candidate site should be disqualified based on the information currently available. The NRC, NWTRB, Environmental Protection Agency (EPA), and EEI have specifically stated that the site characterization program should proceed with those studies necessary to evaluate whether or not the site is suitable. In fact, in response to a question from the NRC/ACNW (7th Meeting, February 23, 1989, meeting transcript), Carl Johnson, the State's Administrator of Technical Programs stated, "I don't think we have sufficient data by which we can conclude right now that the site should be disqualified but we certainly have sufficient data to point in the direction of possible fatal flaws with the site."

Under the Nuclear Waste Policy Act (NWPA), as amended, and the siting guidelines developed by DOE in response to the NWPA, the DOE has the responsibility for determining whether the Yucca Mountain candidate site is suitable for repository development. In its discussion of potential disqualifying conditions, the State appears to have interpreted the guidelines in 10 CFR Part 960 inappropriately. The State focuses on three disqualifying conditions of the siting guidelines in 10 CFR Part 960, two of which (those related to human intrusion and tectonics) are linked to an evaluation of the potential for loss of waste isolation. In order to determine whether these disqualifying conditions exist at the site, it must be determined that the potential for loss of waste isolation exists as a result of the presence of natural resources or tectonic activity. This requires that a performance assessment be completed and that the results of this assessment indicate the likelihood of noncompliance with the isolation requirements. The State has not provided such an assessment to support its argument. The State's argument for disqualification does not address performance, merely the possible presence of features that may be relevant to disqualification. The third disqualifying condition cited by the State addresses the time required for transport along likely and significant radionuclide travel paths. The State's assertion does not recognize the constraints on the identification of likely and significant pathways or demonstrate that groundwater transport along such pathways fails to meet the requirements. The State bases its assertion not on likely and significant radionuclide travel paths, which are performance related, but simply on the fastest possible path of water travel. Further, the NRC has supported the DOE interpretation in both concurrence with 10 CFR Part 960 and a later letter to DOE (Browning, 1985). Although the DOE recognizes the importance of the State's concerns, the Department finds, on the basis of assessments performed to date, that the State's conclusions about disqualification of the site are not appropriate and not correct given the current data.

The State also concludes that, in general, existing DOE technical assumptions are unconservative, particularly where uncertainty exists in the data available. In terms of the disqualifying conditions of the siting guidelines, whether an assumption is conservative or not depends on the impact of the assumption on waste isolation or radionuclide transport, and the specific application in terms of the overall siting process. Neither of these issues is addressed by the State. At the current stage of the site characterization process, the siting guidelines only require DOE to have confidence, considering existing uncertainties, that the technical evidence does not support a finding of disqualification. Before the site can be found to be suitable, however, the DOE must have adequate confidence that the technical evidence not only supports a finding that the site is not disqualified on the basis of that evidence, but that it is not likely to be disqualified based on additional evidence. The State appears to have interpreted the requirements of the guidelines incorrectly, particularly as they relate to the use of existing information early in the program to demonstrate that the site is not "unsuitable," as well as the need to explicitly consider

the relationship between site conditions and the potential for loss of waste isolation, as noted above.

HUMAN INTERFERENCE CONCERNS

The State's basic assertion is that Yucca Mountain is in a rich mining district, and that the site contains common geologic features that are associated with numerous ore deposits. The State also concludes that DOE must assume that future exploration will take place to recover valuable natural resources outside of the controlled area, and that those activities should be expected to lead to some inadvertent loss of waste isolation. With respect to the presence of mineral resources at Yucca Mountain, a recent evaluation (December 1989) has been completed by S. Castor and J. Tingley (Nevada Bureau of Mines and Geology) and S. Feldman (Desert Research Institute). This evaluation concludes that there are no identified mineral resources in an area termed the Yucca Mountain Addition, a requested land withdrawal of approximately 4250 acres bordering the western edge of the Nevada Test Site and the southern edge of the Nellis Air Force Range, and that the potential for mineral deposits or energy resources in this area is low to very low. This evaluation is generally consistent with the information presented in the SCP and the current DOE view that the available data suggest that the mineral potential at Yucca Mountain is not significant.

The SCP also identifies current mines and exploration targets as well as abandoned mines and prospects that are present in the site region. In addition, the U.S. Bureau of Mines has recently completed a series of reports for the NRC related to the potential for natural resources occurring near or at the Yucca Mountain candidate site. Two of those reports are surveys of mines, prospects and mineral locations (Raney, February 1989, August 1990). A third report (Raney, June 1990) is a review of statements contained in the State's letter of November 14, 1989, regarding the occurrence of natural resources and the potential for human intrusion. This report provides detailed information on recently developed mines and reiterates information concerning the geology in the site vicinity. The above references reinforce the DOE's view that the available data suggest that the mineral potential at Yucca Mountain is not significant. Considering other natural resources, including hydrocarbons, the most thorough assessment of this potential has been presented in Section 1.7 of the SCP and concludes the potential for oil and gas is also very low (DOE, 1988).

The important issue in terms of the potential for future exploration and resource recovery in the region is not whether such activities would occur, but rather whether the impact of such activities on waste isolation would be significant. The U.S. Bureau of Mines has addressed the possible postclosure effects of surface and underground mining near a potential repository at the Yucca Mountain candidate site (Raney, October 1990). This report considered six mining scenarios and concluded three would have "no appreciable effect on a closed repository" and the fourth (mining using nuclear explosives) was highly unlikely. Two methods were dropped from appreciable effect on a closed repository" and the fourth (mining using consideration because either the method was infeasible or impacts were mitigated by topography (Raney, 1990b, p. 12). As discussed in SCP Section 8.3.5.13, the DOE has identified numerous natural resource exploration and development scenarios that will be evaluated during site characterization to determine if there are any credible extraction scenarios that result in a significant impact on waste isolation.

It is important to note that both the EPA Standard (40 CFR Part 191) and the NRC regulations (10 CFR Part 60) include specific language regarding how human intrusion should be considered in evaluating radionuclide release. Two points are worth noting. First, the regulations recognize that estimating human intrusion probabilities is different from estimating other scenario probabilities involving natural events and processes. The NRC, in the 10 CFR Part 60 Statements of Consideration (NRC, 1983, 48 FR 28194), states that the ". . rule now incorporates a definition of unanticipated processes and events which are reviewable in a licensing proceeding, such processes and events expressly include intrusion scenarios that have a sufficiently high likelihood and *potentially adverse consequence* (emphasis added) to exceed the threshold for review." The NRC, in the 10 CFR Part 60 Statements of Consideration, states also that ". . there would be no value in speculating on the virtual infinity of human intrusion scenarios and whether they will or will not result in violation of the EPA Standard." Second, the EPA standard discusses the frequency and severity of inadvertent human intrusion into geologic repositories. This guidance suggests an upper bound on the number of boreholes per square kilometer per 10,000 years (40 CFR Part 191, Appendix B). Neither of these consider-

ations is discussed by the State. However, both of these considerations were included in the DOE's evaluation concerning whether Yucca Mountain should be considered for characterization (May 1986). No new information has been developed since that time to change DOE's overall conclusion.

Lastly, DOE notes that the State's concerns regarding mineral potential are being addressed. Study Plan 8.3.1.9.2.1 "Natural Resource Assessment of Yucca Mountain, Nye County, Nevada" is scheduled to be completed during fiscal year 1991. As additional drilling, geophysics, and sample collection is undertaken, analyses will be completed to determine if these data suggest that the potential for extraction of minerals at Yucca Mountain is higher than currently thought and sufficiently high to represent a significant risk to waste isolation.

TECTONICS CONCERNS

The State's basic contention regarding tectonics is that DOE cannot provide reasonable assurance that future faulting or volcanism will not cause a loss of waste isolation. As with the State comments on human intrusion, no specific data are provided that support a conclusion regarding a significant impact on waste isolation. The State also concludes that DOE has not demonstrated that there is reasonably available technology to deal with faulting and ground motion problems in terms of repository design to satisfy preclosure regulatory requirements.

From a regulatory perspective, the State's contention that the faulting around Yucca Mountain cannot be sufficiently well described to achieve reasonable assurance is premature in that reasonable assurance is a licensing issue within the purview of the NRC and cannot be fully evaluated until after the results of site characterization have been presented to the NRC. At this time, the DOE believes that the focus of the site characterization program on early determination of site suitability will provide the data and analyses necessary for the DOE to make findings with confidence on the suitability (or unsuitability) of the Yucca Mountain candidate site with respect to tectonic issues.

Since the DOE started investigating the Yucca Mountain candidate site, the tectonics program has been a high priority. In numerous documents, the DOE has recognized that the Southern Great Basin is an active tectonic area, and has stated that because of uncertainties in evaluating the potential for future faulting and volcanism, additional data collection is needed. Brief examples are provided below that address the issues of faulting (including the potential for ground motion) and volcanism.

The potential for future faulting will be evaluated to determine the potential impacts on waste isolation during the postclosure period (see SCP Section 8.3.5.13). Based on current information, faulting (and associated strain) is not expected to alter the hydrologic system to such a degree that waste isolation could be significantly affected. Specific assessments were included in the Environmental Assessment (EA) and the DOE Analysis of Sites Nominated for Characterization published in May 1986. As discussed in the EA and the SCP, there is no evidence to suggest that the water table has been as high as the potential repository horizon during the Quaternary Period (the last 1.8 million years), suggesting that tectonic events during this period have not significantly affected the position of the water table. However, uncertainties in assessing the past water table positions will be addressed by the site investigation program.

The issue of the potential for ground motion from earthquakes during the preclosure period has also been assessed in several DOE documents (EA, SCP, SAND 86-7013). The DOE recently completed a seismic design cost/benefit assessment (SAND 88-1600) which in part addressed the question of design feasibility given expected seismic events. This study supports past DOE assessments that the seismic design will be well within reasonably available technology. This conclusion is further supported by the fact that some nuclear reactors, e.g., San Ohofre in Southern California and Diablo Canyon in Central California, operate in seismic environments more severe than that at Yucca Mountain (Algermissan, et al., 1982). The site investigation program continues to place a high priority on studying the recurrence intervals of movement on the local and regional faults to determine if the DOE assessment on the seismic hazard should change. These studies include very detailed field work associated with the potential location for surface facilities. Study Plan 8.3.1.17.4.2, "Location and Recency of Faulting near Prospective Surface Facilities," passed the NRC acceptance review on November 24, 1989. The NRC technical review was completed on March 16, 1990.

In addition, the NWTRB's Second Report to Congress (November 1990), recommends that the determination of site suitability *should not* (emphasis added) be

based on the occurrence of seismic ground motion or fault displacement alone. Rather, it is the likelihood of adverse consequences and the ability of DOE to design the repository system that should decide whether the site is suitable. Earthquakes of various magnitudes are naturally occurring events and can be anticipated during the Yucca Mountain potential repository's operational and postclosure periods. A repository at Yucca Mountain would be designed conservatively to resist the effects of a earthquakes that could occur during these periods. It is the consequences of these seismic events to public health and safety and to waste isolation that are of concern, not the determination that such events will occur.

The DOE has taken seriously the concerns regarding the potential for future volcanic activity expressed by the State of Nevada and the NRC. Postclosure volcanism scenarios will be evaluated during the site investigation program. Current estimates of the probability of volcanism indicate that the regulatory release limits will not be exceeded (EA and SCP). Field studies related to volcanism have been ongoing for a number of years, and updates to estimates of the probability of volcanic activity will be contained in an early report in the site program. Two relevant study plans were identified as having high priority with regard to ongoing field activities. Study Plan 8.3.1.8.5.1, "Characterization of Volcanic Features" (primarily a data collection study) passed the NRC acceptance review on August 20, 1990. Study Plan 8.3.1.8.1.1, "Probability of Magmatic Disruption of the Repository" (primarily a data analysis study) was transmitted to the NRC and the State of Nevada on March 15, 1991. The NWTRB has participated in a field trip to the Yucca Mountain area to discuss studies of volcanism. The NWTRB's First Report to Congress (March 1990) states that the "Board finds that the DOE and its contractors . . are pursuing a well-conceived volcanism study program.

GROUNDWATER TRAVEL TIME CONCERNS

The State contends that the DOE's conceptual model for groundwater flow is simplistic and nonconservative in nature. The State also concludes that fracture flow should be assumed to exist, and that the current data demand a finding of disqualification. In its discussions on the finalization of the siting guidelines (10 CFR 960), the DOE stated that site characterization studies are necessary prior to groundwater travel time calculations since, prior to these studies, "the pathways, rates, and amounts of groundwater travel [will not be known] in sufficient detail to know precisely whether the site complies with the 1000-year travel time" (Fed Reg. Vol. 49, No. 236, page 47733). Also, in its Statement of Considerations, the NRC stated that "the Commission concludes that groundwater travel time calculations can be determined in the unsaturated zone . . . provided that the proper level of site characterization analysis is conducted . . . the Commission believes it is feasible for DOE to demonstrate compliance with the groundwater travel time provision using existing field and laboratory experiments" (NRC, 1985, 60-SC-31).

The disqualifying condition of the siting guidelines addresses groundwater travel time "along any pathway of likely and significant radionuclide travel" rather than along any pathway, as the State assumes. The wording of the guideline requires that a pathway be both likely and that it allow "significant" quantities of radionuclides to travel along it. The State considered neither of these details. Both the EA and the SCP include groundwater travel time estimates, which range from about 9,000 to 80,000 years (mean of about 43,000 years), far in excess of the regulatory requirement of 1,000 years.

DOE's current representation is that groundwater flow occurs in both the matrix and in fractures but that flow in the matrix predominates over flow in fractures. This is based on observations that the matrix is less than fully saturated, estimates of pore and aperture sizes, and the hypothesis of matric-potential equilibrium between fractures and the matrix. The SCP explicitly acknowledges the potential for flow in fractures and faults, and recognizes the need to obtain data to understand the factors controlling fracture flow. Indeed, the current conceptual model for unsaturated flow is that groundwater flow is partitioned between the matrix and fractures, and includes the dependency of the flow on flux magnitude and the relative conductivities of matrix and fractures.

As discussed in SCP sections 8.3.5.12 and 8.3.1.2, an extensive site investigation program is planned to study the hydrologic flow processes at Yucca Mountain. These studies include tests to specifically investigate fracture flow and to thoroughly understand the occurrence of any flowing water that is encountered within the unsaturated zone.

An independent Unsaturated Zone Hydrology Peer Review Team (PRT) was established by the DOE to evaluate work done by the Yucca Mountain Site Characteriza-

tion Project participants in developing an understanding of unsaturated zone hydrology at the Yucca Mountain site (DOE, 1991). The PRT agreed with investigators that the potential for lateral flow and the concentration of flux down fault zones need to be investigated before the issue of groundwater travel time is resolved. The PRT supported DOE's use of a probabilistic approach and encouraged investigators to refine the models of site hydrology by incorporating site data.

In its First Report to Congress (March, 1990, p. 18) the NWTRB states that the Board "believes that DOE research on the rate and distribution of recharge to the unsaturated zone within the Yucca Mountain geologic block is well conceived and well planned."

SUMMARY

In summary, the concerns raised by the State of Nevada are not new. These concerns have been raised in the past, and have been addressed by the DOE in the development of the plans for site characterization presented in the SCP. The technical issues raised by the State represent acknowledged areas of uncertainty that will be addressed by future site investigations. Based on current information, the DOE concludes that, at present, there is no evidence to suggest that the site should be disqualified. This view is supported by both the NWTRB and the NRC, most recently in testimony before the Senate Energy and Natural Resources Committee on March 21, 1991. They stated that there is no technical basis at this time to disqualify the Yucca Mountain candidate site, and that the DOE is ready to proceed with the site investigations that are directed at determining whether or not the site is suitable for development of a repository. If, at any time in the future, technical data support a finding that this conclusion should change, the DOE will stop site investigations at Yucca Mountain, and notify the Congress, and the Governor and the legislature of Nevada as required by law.

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[Attachment 2]

THE SECRETARY OF ENERGY,
Washington, DC, February 28, 1990.

Hon. BOB MILLER,
Governor of Nevada, Carson City, NV.

DEAR GOVERNOR MILLER: This is in response to your letter of November 14, 1989, in which you mention several issues related to geotechnical suitability of Yucca Mountain for a geologic repository and summarize the State's position regarding Assembly Joint Resolutions 4 and 6.

As you know, in the 1987 amendments to the Nuclear Waste Policy Act, Congress directed the Department of Energy (DOE) to carry out a scientific study—"site characterization"—of Yucca Mountain to determine whether or not the site will meet the strict criteria for development of a nuclear waste repository. Unfortunately, to date, DOE has been unable to conduct the site characterization called for by Congress, because Nevada officials have refused to take action on DOE's applications for permits that are needed to conduct scientific studies.

I recognize that a variety of concerns, including those identified in your letter, have been raised over the suitability of the site. Specific studies related to your concerns—(1) human intrusion, (2) tectonics, and (3) ground water hydrology—have been given high priority by the Department. These studies will receive emphasis as scientific investigations proceed. The specific schedule for field activities for these studies takes into consideration comments by the State of Nevada and other reviewers, and focuses on initiating natural resource field work in order to gather necessary field data as early as possible.

Scientific study is necessary to determine whether these concerns are valid and justified, or can be satisfactorily explained and resolved. I assure you that if scientific investigations indicate that the Yucca Mountain site is unsuitable for further investigation, then I will not hesitate to stop all work at the site and so inform Con-

gress, in accordance with the provisions of the Nuclear Waste Policy Act, as amended. But I reiterate that only site characterization can produce the scientific data needed to determine whether or not the site is suitable.

Regarding Assembly Joint Resolutions 4 and 6, I am advised by counsel that there is no legal merit to your assertion that the State's notice of disapproval of the Yucca Mountain site is "valid and effective." Accordingly, I will fulfill my responsibility under the Nuclear Waste Policy Act, as amended, to investigate the suitability of the site.

Sincerely,

JAMES D. WATKINS,
Admiral, U.S. Navy (Retired).

STATE OF NEVADA.
EXECUTIVE CHAMBER,
Carson City, NV, April 2, 1991.

Hon. J. BENNETT JOHNSTON,
Chairman, U.S. Senate, Committee on Energy and Natural Resources, Dirksen Senate Office Building, Washington, DC.

DEAR SENATOR JOHNSTON: Enclosed please find my responses to questions that you asked in your letter of March 22, 1991.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

BOB MILLER, *Governor.*

[Enclosure.]

QUESTIONS FROM SENATOR JOHNSTON

You stated at the hearing that the State of Nevada would continue to use whatever legal authority is available to prevent the study of the Yucca Mountain site based on your belief that the process has been unfair and your belief that DOE will not conduct an objective study. In other words, nothing has changed in your view of the nuclear waste program.

COMMENT

Your restatement of my position as described at the hearing is inaccurate. I presented in my written testimony, and essentially repeated in the hearing:

> As long as the fundamental principles of the 1982 Nuclear Waste Policy Act regarding repository site screening and selection remain set aside, and the federal government persists in efforts to constrict the State's constitutional and statutory rights as well as otherwise interfering in State matters, Nevada will continue to oppose the imposition of this unwanted project on the State through any available lawful means.

You are correct in your understanding that nothing has changed in my view of the nuclear waste program.

Question 1. Why, then, has the state decided to process the permits? Is the state simply responding to its loss in the Ninth Circuit, abiding by the letter of the law now that it has been told to by the court?

Answer. The State of Nevada intended, among other issues in *Nevada* v. *Watkins*, to clarify the time at which Nevada could execute a valid Notice of Disapproval pursuant to the Nuclear Waste Policy Act, as amended. It did so by seeking judicial review of Nevada's claim that the Secretary of Energy's authority to proceed at Yucca Mountain had terminated as a result of Nevada's having successfully vetoed the site, pursuant to the Act. Nevada, in 1989, during its first regular Legislative session since adoption of the 1987 Nuclear Waste Policy Amendments Act, took specific action to disapprove the site, as prescribed by the Act. When Congress failed to act in response, according to the Act, Nevada claimed that the site had been vetoed, thus terminating the Secretary's authority to proceed. The Secretary disagreed with this claim.

The need for judicial resolution of Nevada's statutory claim, as well as the constitutional issues raised in *Nevada* v. *Watkins*, resulted in Nevada declaring DOE's permit applications moot, and their being returned to the applicant without being acted upon. The question of the timing of the State's Notice of Disapproval under the newly enacted NWPA Amendments needed to be resolved prior to DOE's beginning site characterization in order to be assured that observed ambiguities in the

Act, as amended, would not later lead to a claim that the President's signing the Amendments Act constituted his approval of development of a repository at Yucca Mountain. If such were the case, Nevada's ability to forward a valid Notice of Disapproval following site characterization would have been co-opted.

As you know, the Ninth Circuit Court of Appeals ruled, and the Supreme Court let stand the ruling that Nevada's Notice of Disapproval was premature. Therefore, as I stated in the hearing, Nevada is prepared to begin processing DOE permit applications as they are submitted, and has so informed the DOE. The U.S. District Court, in Nevada, in which the government sought to secure the processing of the permits by Nevada, has established a procedure for early dismissal of the government's case, based upon the letters from Nevada regulators to the DOE regarding permit processing.

Question 2. Will the state operate in good faith to either grant or deny these applications within the 75 day period for consideration?

Answer. As I testified, the State of Nevada will treat the Department of Energy applications the same as those of any other applicant. The decision to grant or deny permits will be made on the merits of the individual applications.

Each of the three (3) applications submitted by the Department of Energy is unique, involving different and distinct state laws and regulations.

The time period for consideration of permit applications varies from application to application depending upon the specific regulation or statute governing its consideration, including the rules of administrative practice that have been established.

Question 3. Does that mean that by Monday, June 3, which is my quick calculation of 75 days, the state will either issue these permits, or deny them?

Anwer. See response to Question 2.

Question 4. What time schedule can the state commit to meet?

Answer. See response to Question 2.

Question 5. Will the state operate in good faith and consider these permit applications according to the same standards it would for a permit for any other activity?

Answer. See response to Question 2.

Question 6. I'm told that the state recently issued similar permits for a gold mining operation for an area of land that is much larger and will require a much greater amount of water usage. Is the state willing to consider the Department's applications in the same manner, on the same type of expedited time schedule?

Answer. See response to Question 2.

Question 7. What if the state denies these permits at the end of the 75-day review period? Obviously, the Department will go to court. But what happens from the state's perspective? Is it all over?

Answer. I am not going to speculate about the outcome or consequences of a regulatory review process that may occur in the future.

Question 8. Is there an administrative appeal process? How long would that process take?

Answer. As with any other regulatory or adjudicatory process, an applicant whose application is denied has the rights of appeal both administratively as well as through the courts. The time period for such appeal is dependent upon numerous factors, including the reasons for such action, and the nature and timing of an appeal, etc.

Question 9. I gather from your statement that you are rejecting my suggestion that the state cooperate with the federal government to allow access to Yucca Mountain in order to prove or disprove its technical suitability. As I understand it, your answer to my yes or no question is no. Is that correct?

Answer. As I testified during your hearing, the issue is what you mean by cooperation. The State has committed that it will begin to process the DOE permit applications for site characterization as the applications are received. The State will not, however give up its opposition to the development of a repository at Yucca Mountain.

Question 10. If the state is so certain that the site is not technically suitable, as you have stated quite eloquently in your testimony, why doesn't the state want to take the opportunity to prove that?

Answer. To date, the Department of Energy has spent over $1 billion on the Yucca Mountain project, collecting data and developing a site characterization plan.

First, the State of Nevada is the only party other than the Department of Energy that has actually examined the data base, to the extent it was made available. On November 14, 1989, I submitted to Secretary Watkins our analysis of this data in three areas which the State believes demonstrates that Yucca Mountain cannot meet Qualifying conditions in DOE's site guidelines or actually meets the Disqualifying condition. The State believes that it has successfully demonstrated its case for

site characterization. To date, the State's technical case has been neither refuted or disproved by the Department of Energy whatsoever.

Secondly, the Department of Energy has yet to provide substantive response to the States comments on DOE's site characterization plan, which were submitted in September 1989, some 18 months ago.

The State has availed itself of opportunities to demonstrate its case regarding the technical suitability of the Yucca Mountain site. The burden is now on the Department of Energy to reply, in substance, to the case the State has made as a prerequisite to beginning site characterization.

As you stated during the hearing, Mr. Chairman, the original 1982 Nuclear Waste Policy Act requirement for three sites to be fully characterized was scraped because DOE projected a cost of $1 billion per site for characterization. Now that DOE has spent over $1 billion at Yucca Mountain, I believe that an evaluation of that data, as the State has done, is required of DOE. It is not sufficient or acceptable for DOE to merely state that an additional $3–$4 billion need to be spent at Yucca Mountain to determine if its suitable.

Question 11. Why isn't the state willing to engage in an objective technical debate with the scientific community over these technical issues?

Answer. The State's case regarding the technical suitability of Yucca Mountain has been provided to the scientific community including the Nuclear Waste Technical Review Board, the Nuclear Regulatory Commission's Advisory Committee on Nuclear Waste, the staff of the Nuclear Regulatory Commission and other interested parties. Any assertion that the State is unwilling to engage in an objective technical debate with the scientific community over technical issues is unfounded, and inaccurate. We and all the involved organizations can document extensive technical interaction in meetings, document reviews, and field evaluations.

Question 12. You have stated that you don't feel the process will be objective. Do you actually believe that the Department of Energy would be able to manipulate technical data in order to convince the Nuclear Regulatory Commission, the Nuclear Waste Technical Review Board, and the scientific community that the site was suitable even if it were not?

Answer. The well documented DOE manipulation of technical data about the sites that were recommended for site characterization in 1986 under the NWPA, in order that the DOE preferred sites, not the best sites were selected for site characterization, is evidence of DOE's willingness to serve its preferred objectives. The DOE unilateral elimination of the entire second repository program, in 1986, that was mandated in federal law should serve as additional evidence.

Further, in December 1988, the Department of Energy actually recommended to the Nuclear Regulatory Commission that the NRC hold off developing safety regulations for a high-level nuclear waste repository until the DOE had gathered more data at the Yucca Mountain site. And when asked by Chairman Carr if DOE was proposing that the NRC tailor the safety regulations to fit the Yucca Mountain site, the DOE representative responded that yes, in some areas it would be a good idea.

Finally, given the most recent unauthorized statements by DOE officials regarding the availability of large ($100–$150 million) sums of money that Nevada could acquire if it were more cooperative and the actions of the same officials to meddle in state affairs, demonstrates that DOE is willing to do or say just about anything to accomplish its perceived mission.

Question 13. You and other state officials have touted Jerry Szymanski's theory about the water table under Yucca Mountain as evidence that the site is not suitable and should be disqualified. Are you aware that even Jerry Szymanski believes it will be necessary to gather scientific data at Yucca Mountain in order to prove that scientific theory? Why, then, isn't it in the state's interest to allow access to the site for this scientific work?

Answer. The State's case regarding the technical suitability of the Yucca Mountain site has not contained nor relied upon the theory put forward by DOE Geologist, Jerry Symanski about the water table under Yucca Mountain. Nevada scientists believe this theory confirms that Yucca Mountain is extremely complex, hydrologically and geologically, and that the understanding of the coupling of the natural processes involved is sufficient (and likely will remain so) to provide the needed level of confidence to secure a license to from the NRC. Mr. Szymanski's theory is not central to the State's technical case for disqualification. You may want to note, however, that in several press interviews with Mr. Szymanski, he has specifically stated that no additional data is necessary to conclude that the Yucca Mountain site should be disqualified from further consideration as a repository site, based on its known technical complexity.

Question 14. Let's assume for the sake of discussion that a potential repository site is studied in another state and ultimately proved suitable for a repository.

Do you think the state should receive—or is entitled to benefits in return for hosting the facility?

Answer. I don't believe it is appropriate for me to comment about the hypothetical situation in another state.

APPENDIX II

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
COMMISSIONER

March 26, 1991

OFFICIAL COMMITTEE FILE
PLEASE RETURN

The Honorable J. Bennett Johnston
Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Chairman Johnston:

It has just recently come to my attention that during the course of the hearing that you conducted on March 21, 1991 on the Department of Energy's high-level waste program, Senator Harry Reid of Nevada referred to remarks that were made by one of the commissioners of the Nuclear Regulatory Commission (NRC) at a symposium of the National Academy of Sciences on the subject of radioactive waste management (see transcript of hearing, p. 26).

I was the one who delivered those remarks and, in view of the unfortunate way in which those remarks were characterized -- including the suggestion that I believe that the Department of Energy should be allowed to compromise public health and safety by "juggling numbers" -- I think it is important that the record of this hearing accurately reflect my views on this matter.

To this end, I am enclosing a copy of a letter that I sent to Senator Reid setting forth my position, as well as Senator Reid's response to my letter. I would appreciate it if you would include these documents at the appropriate place in the record.

I thank you for your attention to this matter.

Most sincerely,

James R. Curtiss

Enclosure: as stated

cc: Senator Malcolm Wallop
Senator Harry Reid
John Bartlett

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
COMMISSIONER

December 19, 1990

The Honorable Harry Reid
SH-324
Hart Senate Office Building
United States Senate
Washington, D.C. 20555

Dear Senator Reid:

I recently had an opportunity to review the transcript of an October 2nd, 1990 hearing before the Subcommittee on Nuclear Regulation of the Committee on Environment and Public Works on the subject of the high-level nuclear waste disposal program. During the course of that hearing, you expressed a concern about the propriety of my remarks at a recent symposium sponsored by the National Academy of Sciences' National Research Council. Specifically, you observed:

> I think it's important to note that the U.S. Nuclear Regulatory Commissioner, James Curtiss, at this hearing that we've heard about earlier in this hearing, a symposium that was sponsored by the National Research Council -- James Curtiss said there that -- I want everyone here to understand that I didn't make up this "juggling numbers". That is specifically what a commissioner of the Nuclear Regulatory Commission said. He said that he felt that the Energy Department should have greater freedom to "juggle numbers" as long as the overall performance of the repository wasn't too greatly affected.

At a later point in the hearing, when this issue came up again, you commented:

> Mr. Chairman, you can re-juggle the words all you want, but words by the man from the Nuclear Regulatory Commission was "juggle the numbers". That's what he said. So you can juggle the words anyway you want. He said he wanted to "juggle the numbers". That's what I think is wrong.

I have since gone back and reviewed the text of my remarks, as well as the recorded tapes from the Symposium, and I want to assure you that nowhere during that Symposium did I say that the Department of Energy should be allowed to "juggle the numbers" in a manner that would circumvent the NRC's performance objectives for the repository. Indeed, as best as I can determine, this

phrase seems to have originated in a newspaper article appearing in the September 18, 1990 issue of the Las Vegas Review Journal, reporting on the Symposium (copy attached).

As the Commission's witness at the Subcommittee's hearing, Mr. Robert Bernero, pointed out, I have expressed a concern about the relationship of the Commission's regulations to the standards established by the Environmental Protection Agency (EPA). Additionally, I have commented on the workability of the provisions in the agency's existing regulations that allow NRC to specify alternative subsystem performance criteria. It is this latter point that apparently led the reporter to describe my remarks in the pejorative fashion that he did. I trust that you will see from my remarks, though, (a copy of which I am enclosing) that I neither said nor intended that the Department of Energy should be allowed to circumvent our health and safety standards by "juggling the numbers."

I thank you for the opportunity to clarify my position on this issue.

Most sincerely,

James R. Curtiss

Enclosures: as stated

cc: Senator Bob Graham
Senator Alan K. Simpson
Steve Adams, Las Vegas Journal

[From the Las Vegas Review-Journal, Sept. 18, 1990]

REVERSE OF EPA'S NUKE DUMP SAFETY STANDARDS URGED

(By Steve Adams)

WASHINGTON.—Safety standards could doom the proposed Yucca Mountain nuclear waste repository unless requirements are revised to make it easier for the Nuclear Regulatory Agency to license the project, several federal officials said Monday.

A two-day symposium to examine problems related to licensing of the radioactive waste repository started off with calls for reevaluation of the Environmental Protection Agency's standards for the project.

The symposium is sponsored by the National Research Council, which last month issued a report criticizing EPA standards as too inflexible and unrealistic.

The EPA is revising standards designed to ensure that the underground repository, proposed 100 miles northwest of Las Vegas, will safely contain highly radioactive wastes for at least 10,000 years. The standards will set maximum levels for radioactive releases into ground water and air, and performance requirements for waste containers.

U.S. Nuclear Regulatory Commissioner James Curtiss set the tone for the conference's first day when he warned in an opening speech that a complex mix of EPA standards and NRC requirements could make it difficult for the commission to license a repository.

Curtiss said he was troubled by the legal difficulties that may arise from the fact the EPA standards require scientists to compute the probability of many natural events to determine whether a repository will be safe. The NRC has long used a "deterministic" method that relies more heavily on design and engineering criteria to assess risks.

"We now have what amounts to two legally distinct licensing standards: NRC's deterministic requirements . . . and EPA's probabilistic standards," Curtiss said. The use of two methods to evaluate repository plans could make it difficult for the NRC to defend any license in court, he said.

"In short, while we may have reduced the technical uncertainty with such an approach, we have increased the legal uncertainty," Curtiss said. Conflicts between the two risk assessment methods could "overwhelm the programs," the commissioner said.

Curtiss called for the EPA to consider switching to the risk assessment method traditionally used by the NRC. He declined to say whether the EPA standards also should be relaxed to make licensing easier, but he said the Energy Department should have greater freedom to rewrite machinery as long as the overall performance of the repository wasn't affected.

Not all speakers showed the same restraint.

Mel Carter, a member of the Nuclear Waste Technical Review Board, and Dade Moeller, chairman of the NRC Nuclear Waste Advisory Committee, said the EPA standards are too strict.

The EPA has said that an underground repository like the one proposed at Yucca Mountain should cause no more than 1,000 cancer fatalities over 10,000 years. That translates into one cancer death every 10 years, on average, attributed to operation of the repository and transportation of nuclear waste to the facility.

Moeller suggested that standard was unreasonably stringent. He said risk assessment experts believe radon, a radioactive gas that seeps through the ground into some homes, claims the equivalent of one life every three minutes. Although Moeller did not advocate raising the repository standard to match the risk from radon, he said he believed it could be increased to a level higher than the risk from uranium ore.

The symposium is likely to hear a wider range of views today. Bob Loux, director of Nevada's Agency for Nuclear Projects, said he plans to tell the conference that it is problems with the Yucca Mountain site, not with the EPA standards, that will make it difficult to license a repository.

Loux, who is spearheading Nevada's fight against the project, alleged in an interview Monday that the two-day conference is an attempt by the "nuclear priesthood"—pronuclear regulators and businesses—to interfere with EPA's effort to set reasonable standards for a repository. Loux said relaxing the standards to make it easier to win approval of a repository at Yucca Mountain would be like "moving the ball in the air and moving the goal posts."

The conference also will hear today from EPA, NRC and Energy Department staff.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Office of Governmental and Public Affairs
Washington, D.C. 20555

No. S-19-90
Tel. 301/492-0240

FOR IMMEDIATE RELEASE

REMARKS BY
JAMES R. CURTISS
COMMISSIONER
UNITED STATES NUCLEAR REGULATORY COMMISSION

AT THE

SYMPOSIUM ON RADIOACTIVE WASTE REPOSITORY LICENSING
NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL

WASHINGTON, D.C.
SEPTEMBER 17, 1990

"REPOSITORY PERFORMANCE -- THE REGULATORY CHALLENGE"

INTRODUCTION

Good morning, ladies and gentlemen. It is a pleasure and indeed a distinct honor for me to have this opportunity to deliver the keynote address this morning, opening what I consider to be a most timely and important symposium on a subject of great interest to all of us, the licensing framework for radioactive waste repositories.

This Symposium comes at an important time in the waste disposal program, with the regulatory agencies -- the Environmental Protection Agency (EPA) and we at the Nuclear Regulatory Commission (NRC) -- currently focusing our attention, respectively, on EPA's ongoing efforts to establish the basic health and safety framework that will govern the licensing of a geologic repository and, following that, on NRC's efforts to conform our more detailed licensing requirements to those EPA standards.

In July of this year, the Board on Radioactive Waste Management of the National Research Council released a report entitled "Rethinking High-Level Radioactive Waste Disposal", which examines a wide range of issues concerning the licensing process for geologic repositories. This report, together with a number of other recent analyses and commentary, have served to focus increased attention -- and, in some quarters, concern -- on the regulatory standards and process for the licensing of a geologic repository. It is this subject that I would like to focus on in my remarks here this morning.

In so doing, however, -- and particularly in view of my training as a lawyer and not a scientist -- what I propose to do is to step back from many of the detailed technical issues that occupy those who work in this arena on a day-to-day basis -- issues such as APEs and UPEs, CCDFs, and the like --and instead focus on what I think are the broader policy questions that have arisen with regard to the regulatory framework, beginning first with an examination of EPA's approach to establishing a generally applicable environmental standard; then focusing on the relationship between EPA's standard and NRC's implementing regulations -- what I will refer to as the technical nexus; and then, finally, turning my attention to the approach taken by the NRC in its implementing regulations and, specifically, the approach that we have taken to subsystem performance criteria.

Perhaps before I begin -- and again, reflecting my own personal background and biases -- let me turn first to the Nuclear Waste Policy Act for a brief but important reminder of what the statute itself says about the regulatory framework for geologic repositories: Section 121 of the Act directs EPA to establish generally applicable standards for protection of the general environment from offsite releases from radioactive material in repositories; that same section goes on to direct the NRC to establish the detailed technical requirements, including a system of multiple barriers, for the licensing of such repositories.

Importantly, the approach used here was one that Congress had used elsewhere: EPA was to set the generally applicable environmental standards, reflecting their conclusion as to what would be required to protect the public health and safety; and NRC, in turn, was to establish the detailed technical requirements, defining how, specifically, one would go about meeting EPA's general standards.

I emphasize this distinction not simply because it exists, but because it is an important one -- and one that I will return to when I discuss the relationship between EPA's standards and NRC's implementing regulations.

EPA STANDARDS

With that by way of general background, let me now turn to the first of the three issues that I would like to address this morning, the subject of EPA's generally applicable environmental standard. As I indicated at the outset of my remarks, EPA is currently in the midst of repromulgating its general standard, responding to a court remand of July of 1987.

It is in this context that the opportunity has arisen, once again, for those within EPA who are responsible for the development of this standard, as well as those of us outside the agency who have an interest in this matter, to reexamine not just that part of the standard that was the subject of the court remand, but to consider as well the entire range of issues, including the containment requirements, that have been so controversial over the years.

Two issues, in particular, have arisen as a result of the pending review: First, the overall stringency of the EPA standard; and second, the feasibility of implementing the probabilistic portion of the standard. Neither of these two issues, of course, is new and, for that reason, I don't propose to review the lengthy history associated with either one here this morning.

But what I do think is important here and what ought to be emphasized is the continuing and unresolved debate over both of these issues. Indeed, it was this very point that the NRC made in our letter of August 27, 1990, commenting on EPA's Working Draft Number 2. With regard to the stringency of the proposed standard, the letter observed, and I quote:

> "There continues to be considerable controversy regarding the stringency of [EPA's standards]. This controversy results, at least in part, from concerns over the very low levels of risk which underlie release limits imposed by EPA's standards, particularly when compared to other federal health and safety standards. We are concerned that a clear understanding and acceptance of the standards will not be achieved until EPA has explicitly documented the acceptable risk level that underlies the release limits of the standards and the way in which the release limits were derived from that risk level."

With regard to the ability to implement the EPA standards, the NRC letter of comment indicated that:

> "[T]he Commission continues to be concerned about the workability of standards that require numerical probability estimates for very unlikely processes and events."

In my judgment, the debate over the stringency of the standards will continue, perhaps notwithstanding whatever explanation EPA might provide. Nevertheless, as the Commission emphasized in its comment letter, the basis for the proposed standards should be thoroughly documented and, more importantly, explained in the context of regulatory standards that have been imposed for other risks experienced by society, so that those who might wish to evaluate the stringency of the EPA standard will have a framework within which to do so.

Of greater concern, at least in my personal judgment, is the continuing controversy over the ability to implement and apply probabilistic standards as a basis for licensing a geologic repository. This issue, as I indicated, is not new either. Indeed, it was first raised by the Commission in 1978, when the Commission, in commenting on this matter to EPA, said, and I quote:

> "We feel strongly that a deterministic method should be used to regulate nuclear facilities. We are aware that you are considering a substantially different type, a probabilistic standard which requires quantitative risk assessment. Based on our understanding of the virtues and the weaknesses of quantitative risk assessment, we are convinced that it can and should be used to provide insight on the quality and effectiveness of HLW disposal regulation, but it cannot be the explicit basis of the regulation . . ."

The discussion of this most important issue continued over the next several years, culminating in EPA's promulgation of its standard -- with its basic probabilistic framework intact -- in September of 1985. Importantly, the standard included the following proviso:

> "Performance assessments need not provide complete assurance that the requirements of [this standard] will be met. Because of the long time period involved and the nature of the events and processes of interest, there will inevitably be substantial uncertainties in projecting disposal system performance. Proof of the future performance of a disposal system is not to be had in the ordinary sense of the word in situations that deal with much shorter time frames. Instead, what is required is a reasonable expectation, on the basis of the record before the implementing agency that compliance with [the standard] will be achieved."

It was based upon the inclusion of this language in the final EPA standard, that the staff advised the Commission at the time that EPA's probabilistic standards can, indeed, be implemented in a licensing review.

Four years later, in October of last year, the staff came back to the Commission, once again raising the implementation issue -- this time in the context of EPA's now-ongoing response to the court's remand. Acknowledging that EPA had endeavored to address this issue in its 1985 standard in the fashion recommended at the time by the NRC, the staff noted this past October that:

> "[W]hile the language added by EPA to the rule and in the Supplementary Information [in 1985] tends to recognize qualitative considerations, an acceptable approach to implementation is still ambiguous and the governing standard is still the probabilistic numerical standard."

Thus, we find ourselves today -- nearly 12 years after the NRC first identified the difficulties associated with implementation of a probabilistic standard in a licensing context -- facing what I consider to be a most unfortunate situation: We have yet to identify a clear and unambiguous approach to implementing EPA's standard in our licensing review.

What we do about this situation, of course, is the challenging question -- and with your forbearance, this is a topic that I intend to address shortly, when I turn my attention to the NRC regulations and their relationship to the EPA standards. I would emphasize at this point, however, that if the EPA standards are to serve as an independent regulatory basis for licensing the repository, a clear and unambiguous resolution of this issue is essential and urgent.

RELATIONSHIP OF NRC REGULATIONS TO EPA STANDARDS

Lest it appear that the EPA standards are the source of my greatest concern, let me now turn my attention to the remaining two issues that I would like to discuss this morning -- both of which more directly involve our approach at the NRC to establishing detailed implementing regulations -- beginning first with the relationship between EPA's standards and NRC's regulations.

As I indicated at the outset, the Nuclear Waste Policy Act envisions that EPA would establish generally applicable environmental standards, setting forth the general offsite limits necessary to protect the public health and safety, with the NRC in turn establishing the detailed technical requirements necessary to achieve those standards.

This approach, as I indicated, is one that Congress had used in other contexts -- and, specifically, in the Uranium Mill Tailings Radiation Control Act of 1978. In addition, it draws directly upon the authority that was transferred to EPA, when that agency was

first established, to promulgate generally applicable environmental standards.

In view of the division of responsibility between the respective agencies -- EPA setting the overall standards, NRC establishing the implementing regulations to achieve those standards -- you can imagine that it came as quite a surprise to me when, in the context of a recent Commission meeting -- where the Commission and the staff were discussing the difficulty of demonstrating compliance with EPA's probabilistic standard in our licensing proceeding -- I learned for the first time that one did not necessarily comply with the EPA standards by demonstrating compliance with the NRC regulations. Indeed, as it turns out, the same result attaches to the converse: one does not necessarily comply with the NRC regulations by demonstrating compliance with the EPA standards.

While it is true that compliance with the NRC regulations makes it more likely that the applicant will satisfy the EPA standards, the technical nexus that I was searching for -- and that, in my judgment, the concept of a generally applicable environmental standard contemplates -- was not sufficiently well-established to permit one to reach the legal conclusion that compliance with the NRC regulations could be deemed to constitute compliance with the EPA standards.

The advantage of such a nexus is obvious: One need not litigate the underlying EPA standard, with all of the attendant difficulties associated with its probabilistic character, if the deterministic NRC regulations were based upon a clear technical nexus to the EPA standard. But unfortunately, that is not the situation that we have today.

One can quite readily understand, historically, why this technical nexus between EPA's standards and NRC's regulations does not exist -- recall that in the late '70s and the early '80s, NRC was endeavoring to convince EPA of the problems associated with a probabilistic standard and, indeed, had its own deterministic standard out on the streets, in final form, before the EPA standards were promulgated. Unable to convince EPA to abandon the probabilistic approach when it finalized its standards in 1985, we now have what amounts to two legally distinct licensing standards -- NRC's deterministic requirements in 10 CFR Part 60, and EPA's probabilistic standards in 40 CFR Part 191.

I recognize, as the staff concluded in NUREG-0804 and its subsequent appendices, that compliance with NRC's regulations does indeed make it more likely that EPA's standards will be met. However -- and perhaps here I view this issue more through the eyes of a lawyer reflecting upon the challenge that the applicant will face in a licensing proceeding -- absent a technical nexus that would permit one to conclude that compliance with NRC's regulations can be deemed to constitute compliance with EPA's standards, I fear

that the applicant will face the challenge of demonstrating that both the NRC regulations and the EPA standards have been satisfied.

In short, while we may have reduced the technical uncertainty with such an approach, we have increased the legal uncertainty, perhaps to the point where the various requirements that the applicant must demonstrate compliance with in a licensing context -- and particularly those that involve probabilistic elements of proof -- will overwhelm whatever technical advantage might otherwise exist in such an approach. Indeed, as Pogo once observed, we may be facing insurmountable opportunities.

What is the solution? One obvious answer would be for the NRC to reevaluate its subsystem performance criteria, following promulgation of the EPA standard, with an eye towards restructuring those criteria in a manner that would permit one to establish the technical nexus that I referred to earlier. We already know, for example, that one of the three subsystem performance criteria -- the 1,000 year groundwater travel time --is not only a poor surrogate for radionuclide transport, but moreover, does not appear to have a clear nexus to the EPA standard and, for this reason, may not be necessary in 10 CFR Part 60.

I suggest such an approach recognizing that the conclusion of an analysis such as this may well be that the subsystem performance criteria should be made more stringent -- but with the caveat that if this pushes these criteria beyond the bounds of what is technically achievable, then it seems to me that this indirectly raises a question about the stringency of the underlying EPA standard -- which, you recall, was based upon a view at the time as to what could be feasibly achieved. In the event that such a situation comes to pass, this, it seems to me, is a matter that we should then pursue directly with EPA.

The benefit of such an approach, I emphasize, is that the licensing framework for the geologic repository would be based upon deterministic considerations, rather than the very difficult and perhaps intractable considerations that we would face in applying -- and litigating -- a probabilistic licensing standard.

NRC SUBSYSTEM PERFORMANCE CRITERIA

With the time remaining, let me now turn to the third topic that I'd like to cover this morning -- the specific approach that we at the NRC have taken in establishing subsystem performance criteria for the repository. And here what I would like to focus on -- as distinct from the relationship of our regulations to EPA's standards -- is the somewhat narrower question of the approach that we have taken to establishing specific subsystem performance

criteria and the flexibility contained in the application and implementation of those criteria.

As I reviewed the report "Rethinking High-Level Radioactive Waste Disposal", one of the more insightful comments of that report, in my judgment, was its call for a certain amount of flexibility in the implementation of regulatory requirements. And indeed, it is in the context of the NRC's subsystem performance criteria that this recommendation, in my view, appears most appropriate.

As many of you know, we currently have three subsystem performance criteria, set forth in 10 CFR Part 60, each of which represents a minimum requirement and each of which must be satisfied as a prerequisite to issuance of a construction authorization: a release rate for any radionuclide from the engineered barrier system of one part in 100,000; a groundwater travel time criterion of 1,000 years; and a package lifetime criterion of 300 to 1,000 years.

I emphasize, each of these criteria constitutes a minimum requirement and each must be satisfied independent of the others.

That, of course, raises the question as to whether, for example, we would be satisfied with an application that relied to a greater degree on one of the criteria -- say, package lifetime, for instance -- and, based upon that enhanced performance, we would perhaps take that into account in evaluating compliance with any of the other criteria.

I emphasize here that the regulation specifically authorizes the Commission, on a case-by-case basis, to approve some other radionuclide release rate, designed containment period, or groundwater travel time, "provided that the overall system performance objective is satisfied."

But there are two aspects of this provision -- which requires an affirmative Commission decision to implement -- that I would like to emphasize here. First, as I indicated, this provision requires an affirmative decision by the Commission, in order to permit the applicant to depart from the specific subsystem performance criteria defined in the regulation; rather than allowing the applicant, on its own initiative, to determine how best to strike the balance between these three subsystem performance criteria and then to demonstrate that the overall level of protection sought by the Commission has been provided.

Purely as a practical matter, I think it highly unlikely that as we get closer to the licensing process, with the intense public scrutiny that will no doubt exist at that time, the Commission will be in a position to approve the kind of tradeoff that might make sense -- to take one example, greater reliance on the engineered waste package, with perhaps lesser reliance on groundwater travel

time -- if that results in the applicant being allowed to meet a less demanding showing on any of the criteria. This is particularly true, in my judgment, when one recalls that these individual subsystem performance criteria were based upon a conclusion as to what is technically feasible, not necessarily what is required to protect the public health and safety. Are we to allow DOE, the argument will go, to do less than what is feasible?

Beyond the practical problem, the second concern that I have with our ability to apply these criteria in the flexible manner that I think was originally intended is that these criteria were not based upon some well-defined overall health and safety goal -- established either in the body of NRC's regulations or, alternatively, in EPA's general standards. Indeed, as I just indicated, these criteria reflect an agency judgment as to what is feasible, not necessarily what is required to protect the public health and safety. Thus, whether DOE is allowed the flexibility to strike its own balance or NRC is required to take some affirmative action to approve an alternate approach, the problem that we have in either case is the same: How do we define the overall system performance objective -- the standard for evaluating any alternative approach that DOE might propose --when -- (i) an unambiguous technical nexus to the EPA standard is lacking; and (ii) the subsystem performance criteria were formulated to reflect that which is feasible, rather than with an eye toward an overall safety objective?

Here, it seems to me that the answer to this problem, again, lies in establishing a firm technical nexus between the NRC regulations and the EPA standard -- and then allowing the applicant, without the need for affirmative Commission action, to decide what emphasis to place on individual subsystem performance criteria, so long as the Commission determines that the overall performance objective -- ideally the EPA standard -- is satisfied. Indeed, I think you will find that this approach is very much akin to the philosophy reflected in the Commission's recently-approved implementation plan for applying the Safety Goal to commercial nuclear power plants, where less emphasis has been placed on specific subsystem criteria, so long as the overall safety objectives established in that policy are satisfied.

CONCLUSION

Let me conclude my remarks with the following observation: It is my hope that the remarks that I have delivered here this morning will serve to stimulate a healthy discussion over the next two days about how we might improve the regulatory process for licensing a repository in this country. I do not count myself among those who believe that we must reinvent the wheel; but at the same time, perhaps because of the legal perspective that I have on some of

these issues, I see opportunities to improve that process. I wish you a most successful Symposium and I thank you for you thoughtful attention.

HARRY REID
NEVADA

United States Senate

WASHINGTON, DC 20510

'91 JAN 17 A11:32

January 14, 1991

James Curtiss
Nuclear Regulatory Commission
1717 H Street
Washington, D.C. 20555

Dear Commissioner Curtiss:

Thanks for contacting me concerning my remarks both in the Environment and Public Works Committee and on the Senate Floor. I am very pleased to hear that you do not in fact hold the position that current environmental standards should be weakened in order to facilitate licensing of the high level nuclear waste repository. I am sure that you can understand my concern when news reports claim that you hold such a position. Although you state in you letter that you never "intended that the Department of Energy should be allowed to circumvent health and safety standards", when I offered an amendment on the Senate floor making public health and safety the primary concern in the location of a permanent nuclear waste repository, it was defeated. I certainly hope that the Nuclear Regulatory Commission can be depended upon to protect the health and safety of Nevadans when it comes to licensing decisions on a permanent waste facility.

With best wishes,

Sincerely,

HARRY REID
United States Senator

HMR:wm

UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES

TESTIMONY OF THE

NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS
1102 INTERSTATE COMMERCE COMMISSION BUILDING
P.O. BOX 684, WASHINGTON, D.C.

ON

NUCLEAR WASTE LEGISLATION

APRIL 9, 1991

Mr. Chairman and Members of the Committee:

The National Association of Regulatory Utility Commissioners (NARUC) greatly appreciates this opportunity to submit this statement on legislation concerning the Department of Energy's High-Level Nuclear Waste Management Program.

The NARUC is a quasi-governmental, non-profit organization founded in 1889. Within its membership are the governmental bodies of the fifty States engaged in the economic and safety regulation of carriers and utilities. The mission of the NARUC is to serve the public interest by seeking to improve the quality and effectiveness of public regulation in America. More specifically, the NARUC includes the State officials charged with the duty of regulating the retail rates and services of electric and gas utilities operating within their respective jurisdictions. These officials have the obligation under State law to assure the establishment and maintenance of such energy utility services as may be required for the public convenience and necessity, and to ensure that such services are provided at rates and conditions which are just, reasonable, and nondiscriminatory for all consumers.

The public utility commissioners of this country have a responsibility to the ratepayers of their States to ensure that DOE's High-Level Nuclear Waste Management Program succeeds: that the enormous money already collected and spent by the DOE, as well as future funds for the program, result in the successful completion of a permanent repository. For these reasons, the NARUC is committed to seeing that the program moves off dead center and

that site characterization work at Yucca Mountain, Nevada begin as soon as possible. If this does not occur, the Congress should move quickly to restructure the Nuclear Waste Management Program and provide a workable mechanism to select new repository sites. Continuing delays in the program serve no purpose other than to exhaust the ratepayers' funds. The Association took this position, irrespective of any legislative proposals, in a resolution that was adopted at our 102nd Annual Convention in Orlando, Florida last November. (A copy of this is attached to our statement.)

This resolution was first adopted by the NARUC Subcommittee on Nuclear Issues-Waste Disposal, which is chaired by Commissioner Michael Wilson of Florida. Commissioner Wilson has met several times with Secretary Watkins to discuss the programmatic changes and other issues related to DOE's waste program. While Commissioner Wilson and the NARUC are encouraged by the changes that have taken place within the DOE, we believe that the time has come to make more progress in finding a suitable way to dispose of our Nation's high-level nuclear waste.

The NARUC supports Section 512 of the bill, which would repeal the linkages between the schedules for siting and licensing the permanent repository and the monitored retrievable storage (MRS) facility. In our view, the existing linkages will destroy many of the potential cost advantages that an MRS facility offers. Ratepayers have already paid more than $7 billion into the Nuclear Waste Fund since 1982. Waiting for the government to find and then construct a permanent waste site, when a temporary one could be

sited, licensed and operated in the interim, could significantly escalate the costs to ratepayers. Moreover, the waiting alternative does not address the growing problem of on-site storage of spent reactor fuel. This situation not only poses environmental and potential human health risks, it would also force utility ratepayers to pay twice for nuclear waste storage: once through the 1 mill per kilowatt-hour fee the Federal government charges nuclear utilities and again for on-site expenses the utility will want to recoup through their rates.

We also are concerned that Congress not continue to have a shortsighted view of the Nuclear Waste Fund, into which electric utility ratepayers pay approximately $300 million each year. This fund was established by Congress for a specific purpose: the construction of a permanent repository to safely store the Nation's high-level radioactive waste. To use these funds in any other way, such as an offset to the Federal budget deficit, would only cheat these ratepayers of what they and the rest of the Nation rightfully deserve: a safe place to store our high-level nuclear waste. It is for this reason that we have called on the Congress to use its oversight authority to ensure that are no further delays in the program and that the ratepayers' funds are spent prudently.

Aside from the legislative proposals before the Committee, the NARUC wishes to comment briefly about the administrative changes to the Department's waste program that are suggested in the National Energy Strategy (NES) document that was released by DOE in February.

The first of these concerns the development of contingency plans by DOE in the event that the efforts undertaken by the Nuclear Waste Negotiator and the Department prove unsuccessful. The NARUC supports the development of the contingency plans in its resolution. We urge the Committee to encourage the Nuclear Waste Negotiator to hold concurrent discussions with interested States, tribal organizations and local governments concerning the placement of a permanent waste facility within their borders. These negotiations are crucial should the Yucca Mountain site prove to be unsuitable. Once identified, preliminary work to determine the suitability of these sites could begin immediately after the Yucca Mountain site has been disqualified.

The second administrative proposal contained in the NES that the NARUC supports is the development of a prioritized site-evaluation program involving a panel of experts that would assure an <u>early</u> investigation of site features that could potentially disqualify a candidate site. If any lesson can be learned from the past, it is that a technically sound and highly objective preliminary evaluation of candidate sites is needed for the waste program to attain credibility with the public. Without the trust of the public, the program is doomed to fail.

The third administrative proposal that the NARUC would support and would urge this Committee to support is the suggestion of finding alternative ways to carry out the high-level nuclear waste management program. Specifically, the proposal calls for the study of an independent, Federally chartered corporation or another

distinct management structure to conduct several key aspects of the program. Historically, the Federal government performance in handling the difficult scientific and institutional responsibilities of this program have been less than desirable. The time may have come to inject some private sector involvement into the program, which may very well be the incentive to get it moving forward.

In conclusion, the NARUC believes that some reforms of the Nuclear Waste Management Program are needed. The NARUC's commitment in seeing the waste program succeeds is evident in the resolutions we have adopted, the establishment of a Nuclear Waste Program Assessment Office in Washington, and our willingness to work with DOE officials, the Congress and the electric utility industry. By working together, we believe that significant progress can be made toward the goal of safely disposing of our Nation's high-level nuclear waste.

Resolution on Nuclear Waste Disposal

WHEREAS, The Nuclear Waste Policy Amendments Act of 1987 directed the Secretary of Energy to continue to perform site characterization activities at Yucca Mountain; and

WHEREAS, The National Association of Regulatory Utility Commissioners (NARUC) is committed to insuring the fiscal soundness and managerial success of the Nuclear Waste Program; and

WHEREAS, The total ratepayer contribution to the Nuclear Waste Fund as of September 30, 1990 is $7.11 billion, of which $2.7 billion has already been expended, and ratepayers continue to contribute to the fund at a rate of 1 mill per kilowatt-hour of nuclear generation; and

WHEREAS, The NARUC is obligated to represent the ratepayer's interests with regard to the Federal Nuclear Waste Disposal Program; and

WHEREAS, The Nuclear Regulatory Commission concluded that 67 reactor sites will have reached spent fuel storage capacity limits by the year 2014 and the ratepayers will have to pay substantial sums for additional storage capacity for storing spent fuel when their reactors reach their spent fuel storage capacity limits if the Department of Energy is not ready to accept their spent fuel; and

WHEREAS, The Department of Energy has taken positive steps in the last year to put its program on a realistic schedule and to organize its activities in a more efficient and accountable way than in the past; and

WHEREAS, The NARUC is encouraged by these recent developments, is committed to seeing the DOE's program successfully completed, and toward this end remains willing to cooperate with the DOE, NRC, EPA and Congress to insure this result; and

WHEREAS, Any delays in the Department of Energy's schedule for the program would result in further significant costs to the ratepayers of the nation; and

WHEREAS, There is the potential for a large savings of time and ratepayer money if the Department of Energy focuses on an early determination of whether Yucca Mountain is suitable for development as a repository in a timely manner; and

WHEREAS, Congress through its oversight authority should play a key role in insuring DOE's program remains a high priority and receives the management attention it deserves; now, therefore, be it

RESOLVED, That the National Association of Regulatory Utility Commissioners, (NARUC) convened in its 102nd Annual Convention in Orlando, Florida, hereby urges the Congress to exert its oversight authority of the program to insure that there are no further delays in the program and that the funds are spent prudently; and be it further

RESOLVED, That the NARUC urges the Department of Energy to determine whether the Yucca Mountain site is suitable in a timely manner; and be it further

RESOLVED, That the NARUC urges the Congress and the Department of Energy to develop contingency plans, should the Yucca Mountain site prove unsuitable for development into a repository.

Sponsored by the Committee on Electricity
Adopted November 14, 1990

NYE COUNTY

March 8, 1991

Sen. J. Bennett Johnston
Chairman
Committee on Energy and Natural Resources
SD-364 DSOB
Washington, D.C. 20510-6150

Dear Senator Johnston:

I am writing to request an opportunity for the Nye County, Nevada Board of County Commissioners to provide a witness at the Energy and Natural Resources Committee's March 21st hearing examining the Department of Energy's nuclear waste repository program.

As the "situs" jurisdiction, within which Yucca Mountain is located, for the proposed high-level waste repository, Nye County was the only local government designated by Congress an "affected unit of local government" in the Nuclear Waste Policy Amendments Act of 1987. Although two other counties in Nevada have since been designated "affected" by the Secretary of Energy, Nye County continues to play a unique role in the repository program.

For example, according to the Amendments Act, we are the only local jurisdiction authorized by Congress to appoint an "on-site representative" during site characterization.

Nye County was also singled out by Congress to receive grants-equal-to-taxes for repository-related activities and facilities that would otherwise be taxable by us if the Yucca Mountain project were a private, rather that a government, activity.

In recognition of this unique role assigned to us by Congress, the Nuclear Regulatory Commission has designated a "seat" for Nye County on the Licensing Support System Advisory Review Panel. As you know, that Panel is working with the NRC and DOE to design the electronic document retrieval system through which parties to any future licensing proceeding will obtain access to the enormous volume of documents, already accumulating, that would support a repository license application.

This special role reflects the fact that as long as Yucca Mountain remains the focus of the repository program, and regardless of the waste transportation routes that may be selected, Nye County will bear a greater burden from the program than any other community in America.

COUNTY OF NYE • P.O. BOX 153 • TONOPAH, NEVADA 89049 • (702) 482-8191

Nevertheless, Nye County has not taken a position in opposition to the repository. Instead, we have tried to use the funding and role provided to us under the Amendments Act to carry out our responsibilities to our citizens. In that connection, we are developing a sophisticated oversight and participation program to keep our residents informed and to ensure to the best of our ability that the repository program is carried out according to the highest standards of public accountability and technical excellence.

To be sure, we have had our share of disagreements with the Department of Energy, but we are determined to participate constructively in the program.

In the course of our participation, we have developed insights, and some concerns, which we believe would be of interest to the Committee. Following are some of the major issues we propose to address in testimony before the Committee:

1. On February 20, 1991, the Ninth Circuit Court of Appeals vacated DOE's rejection of the requests of Esmeralda County (NV) and Inyo County (CA) for "affected local government" status in the repository program. The Court expressed the view that even the slightest potential threats to the Counties' health and environment from repository operations and waste transportation should make them eligible for "affected" status.

Clark and Lincoln Counties in Nevada already have received the "affected" designation from the Secretary. This decision presents the real possibility that as many as six additional counties adjacent to Nye County soon will receive the designation as well. All those local governments will be competing for the limited financial assistance, authorized in the Amendments Act and appropriated annually by Congress, to enable them to participate in the program.

In its decision, the Court noted that the Congress provided no "specific factors to use in determining... " whether to grant "affected" status. We believe that the likely proliferation of affected local governments resulting from this case calls for some guidance from Congress as to how financial assistance should be allocated. Nye County is prepared to recommend alternative approaches to allocating scarce financial resources among the affected units of local government.

We are also interested in providing comments to the Committee about the Administration's proposal, contained in its FY92 budget submission to Congress, to reduce the complexity, conflicts, and inefficiency inherent in the current grant application process. These same issues have been raised by GAO in its reviews of DOE's grantmaking procedures.

2. While the Congress provided an unprecedented opportunity for a potential "host" community -- Nye County -- to participate in the

repository program, it did not define DOE's responsibility to consider the results of our participation. This issue is increasingly important in view of the millions of dollars we ultimately may spend to conduct high-quality oversight of the repository program. In short, the Amendments Act is clear about our right to participate, but not about how DOE should integrate into its program the product of our oversight efforts.

Accordingly, we have proposed a unique approach to the Department of Energy involving formalized interactions and documentation of principles and procedures governing our participation in various aspects of the program. These initiatives, if adopted by DOE, will establish mutual rights and obligations without in any way compromising the regulatory standards DOE must meet in this program. They will also put to the test DOE's commitment to a "new culture."

The County has undertaken the initiatives cognizant of the risk that they could be misconstrued as somehow promoting a repository in Nevada. Nevertheless, we believe that formalizing interactions with DOE is perhaps the best way for the County to be heard, and responded to, on the complex issues we must confront as the situs jurisdiction.

We would welcome the opportunity to share with the Committee the goals and status of these initiatives to improve the quality, as well as the public credibility, of the repository program.

3. We also would be pleased to give the Committee an overview of the major components of Nye County's repository program. For example, our extensive socioeconomic monitoring and assessment program is providing the basis on which we will assess a wide range of repository-related impacts on our rural communities. This effort will be implemented under an approved quality assurance program, using sophisticated techniques to help us anticipate, measure, and respond to such impacts.

4. To help ensure that DOE's technical program meets the highest possible scientific standards, we have been participating, along with the NRC, in the periodic quality assurance audits conducted throughout DOE's repository program structure, including its contractors. We would be pleased to share with the Committee our objective observations of the strengths and weaknesses of both the QA system and the audit process itself. In addition, we would like to share with the Committee the concerns we have discussed with DOE about a key feature of its scientific decisionmaking: the use of expert panels to achieve consensus on major issues of technical uncertainty.

5. In addition to the financial assistance provided to Nye County to enable us to participate in the repository program, the Congress provided for grants-equal-to-taxes and impact mitigation funding. Unfortunately, certain provisions of the Amendments Act, together with what we believe are misinterpretations of the law by DOE, have

created a possibility that Nye County will receive few of the funds that Congress intended for us to use to cope with the potential burdens on our communities of the repository program. We would like to alert the Committee to those problems with implementation of the Act.

6. Finally, we have developed a public outreach effort to keep our citizens informed about the repository program. In keeping with the national effort to enhance the quality of science education, we are also developing an ambitious plan to establish a top-quality science education facility in Nye County that would benefit all Nevadans. We would welcome an opportunity to brief the Committee about these initiatives as well.

In closing, I would like to emphasize that while much of the national attention to the repository program is focused on the legal battles between DOE and the State of Nevada over access to the Yucca Mountain site, important elements of the repository program are moving forward rapidly. The excavation of an exploratory shaft facility, for example, entails extensive and detailed preparations before even one shovelful of dirt is turned over. Key policy, design and technical issues are being addressed now. Accordingly, we believe strongly that active and effective participation is required of us now if we are to protect the interests of our citizens. In this respect, we are determined to fulfill our responsibilities for as long as Yucca Mountain remains the potential site of a nuclear waste repository.

These same facts make it imperative that Congress pay attention to what may seem to be, relative to site access, unimportant details. This program is not stopped; important decisions are being made. Accordingly, we welcome the Committee's hearing, and we would like to offer our views about how the repository program can be improved.

Sincerely,

Stephen T. Bradhurst

Stephen T. Bradhurst
Program Manager
Nye County Repository Program

DON SCHLESINGER
Commissioner

Board of County Commissioners

CLARK COUNTY BRIDGER BUILDING
225 BRIDGER AVENUE
LAS VEGAS, NEVADA 89155
(702) 455-3500 FAX: (702) 383-6041

TESTIMONY SUBMITTED BY CLARK COUNTY COMMISSIONER DON SCHLESINGER TO THE UNITED STATES SENATE ENERGY AND NATURAL RESOURCES APPROPRIATIONS SUBCOMMITTEE MEETING OF MARCH 21, 1991.

MR. CHAIRMAN, SENATORS,

AS A MEMBER OF THE BOARD OF COUNTY COMMISSIONERS OF CLARK COUNTY, NEVADA, I APPRECIATE THE OPPORTUNITY TO PRESENT TESTIMONY TO THIS COMMITTEE AND PROVIDE YOU WITH CLARK COUNTY'S VIEWS REGARDING THE UNITED STATES DEPARTMENT OF ENERGY'S (DOE) HIGH-LEVEL NUCLEAR WASTE DISPOSAL PROGRAM.

CLARK COUNTY REMAINS DEEPLY CONCERNED ABOUT THE MANNER IN WHICH THE FEDERAL NUCLEAR WASTE PROGRAM HAS BEEN IMPLEMENTED. AS YOU KNOW, THE COUNTY HAS OFFICIALLY OPPOSED FOR MANY YEARS THE CONTINUED EFFORTS TO SITE THE NATION'S FIRST HIGH-LEVEL NUCLEAR WASTE REPOSITORY AT YUCCA MOUNTAIN. COPIES OF RESOLUTIONS WHICH EXPRESS THE BOARD OF COUNTY COMMISSIONERS' UNANIMOUS OPPOSITION TO THE PROJECT AND TO THAT PORTION OF THE PROPOSED NATIONAL ENERGY STRATEGY INITIATIVE WHICH ATTEMPTS TO STRIP NEVADA OF IT'S LEGAL RIGHTS WITH RESPECT TO ENVIRONMENTAL REGULATION OF THE YUCCA MOUNTAIN PROGRAM ARE ATTACHED TO THIS TESTIMONY.

DOE SECRETARY JAMES WATKINS, TESTIFIED TO THIS COMMITTEE TODAY THAT YUCCA MOUNTAIN "IS SYMBOLIC OF THE NATION'S WILL TO GET OUT OF THE 'NOT IN MY BACKYARD' SYNDROME AND SHARE SOME OF THE RESPONSIBLITY" FOR DISPOSING OF NUCLEAR WASTE. NOTHING COULD BE FURTHER FROM THE TRUTH!

YUCCA MOUNTAIN BECAME DOE's "DE FACTO" SITE SELECTION BECAUSE NONE OF THE OTHER FORTY-NINE STATES WANTED A NUCLEAR WASTE DUMP IN THEIR BACKYARD. AS THIS COMMITTEE IS FULLY AWARE, NEVADANS HAVE BORNE MORE THAN THEIR FAIR SHARE TO CONTRIBUTE TO THE NATION'S SECURITY AND DEFENSE OF OUR COUNTRY. WE ARE PROUD OF THESE CONTRIBUTIONS. CLARK COUNTY'S OPPOSITION TO THE YUCCA MOUNTAIN PROJECT, HOWEVER, IS BASED ON A GRAVE CONCERN OVER THE MANNER IN WHICH DOE HAS APPROACHED THE REPOSITORY SITING PROCESS FROM THE BEGINNING AND THE MANNER IN WHICH YUCCA MOUNTAIN WAS ULTIMATELY SELECTED TO BE THE SOLE REPOSITORY SITE FOR FURTHER STUDY.

THE FACT THAT YUCCA MOUNTAIN WAS SELECTED AT ALL AS A POTENTIAL REPOSITORY SITE FOR THE STORAGE OF HIGHLY RADIOACTIVE AND DANGEROUS MATERIALS FOR THOUSANDS OF YEARS IS, IN ITSELF, TESTIMONY TO THE FLAWED NATURE OF THE SITING PROCESS EMPLOYED BY DOE. LOCATED IN A SEISMICALLY ACTIVE, MAJOR EARTHQUAKE REGION WITH GROUND WATER FLUCTUATION ON THE BORDER OF THE ONLY LOCATION IN THE COUNTRY WHERE NUCLEAR WEAPONS ARE REGULARLY EXPLODED, YUCCA MOUNTAIN HARDLY PROVIDES FOR THE NECESSARY GEOLOGICAL OR HYDROLOGICAL STABILITY REQUIRED FOR SAFE, LONG-TERM NUCLEAR WASTE DIPOSAL.

BUT THE ULTIMATE SELECTION OF YUCCA MOUNTAIN IN THE NUCLEAR WASTE POLICY ACT OF 1987 AS THE ONLY REPOSITORY SITE TO BE INVESTIGATED FURTHER BY DOE HAD VERY LITTLE TO DO WITH SCIENTIFIC SUITABILITY. RATHER, CONSIDERATIONS OF POLITICAL EXPEDIENCY AND THE PERCEIVED NEED IN CONGRESS AND WITHIN DOE TO "DISPOSE" OF THE MORE PRUDENT SITE SELECTION PROCESS ORIGINALLY ENVISIONED BY THE NUCLEAR WASTE POLICY ACT OF 1982 PROMPTED A DRAMATIC AND PATENTLY UNFAIR CHANGE IN THE RULES. AND NOW, LESS THAN FOUR YEARS LATER, "HERE WE GO AGAIN". UNHAPPY WITH IT'S INABILITY TO FORCE NEVADA TO RELINQUISH IT'S LEGAL RIGHTS TO CHALLENGE THE SITE SELECTION PROCESS, DOE COMES BEFORE CONGRESS ONCE AGAIN TO FURTHER TIGHTEN THE SCREWS TO THE CITIZENS OF OUR STATE WITH ITS DANGEROUS REQUEST TO ELIMINATE STATE OR LOCAL GOVERNMENT PERMITTING AUTHORITY IN ORDER TO FACILITATE THE SITING OF THE NUCLEAR WASTE REPOSITORY IN NEVADA.

ACTING IN A VACUUM OF SCIENTIFIC CREDIBILITY, DOE AND IT'S ALLIES IN THE NUCLEAR INDUSTRY HAVE NOW RESORTED TO A BLATANT ATTEMPT TO "BUY" THE SUPPORT OF NEVADANS. OFFERS OF CONTRIBUTIONS TO THE STATE'S GENERAL FUND, MADE OPENLY TO A STATE LEGISLATIVE COMMITTEE AND IMPLICTLY IN NEWS RELEASES AND IN INFORMAL CONTRACTS, AND PROMISES OF UNSPECIFIED "BENEFITS" TO LOCAL JURISDICTIONS ARE LITTLE MORE THAN OUTRIGHT ATTEMPTS TO "SOFTEN" THE OPPOSITION OF THE PEOPLE IN NEVADA. EVEN IF DOE WERE IN A POSITION TO DELIVER ON ITS PROMISES OF SUBSTANTIAL ECONOMIC HANDOUTS, NEVADA'S FEDERAL, STATE AND LOCAL PUBLIC OFFICIALS WOULD AND WILL NOT ENGAGE IN A GAME OF "LETS MAKE A DEAL" AND THEREBY JEAPORDIZE THE HEALTH, SAFETY, ENVIRONMENTAL AND ECONOMIC WELL-BEING OF OUR CITIZENS AND COMMUNITIES. IN SHORT, THERE CAN AND WILL BE NO ACCOMMODATION WITH THE FEDERAL GOVERNMENT ON THIS ISSUE!

RESEARCH CONDUCTED BY INDEPENDENT ENTITIES, AS WELL AS BY THE STATE OF NEVADA, DEMONSTRATE THAT THE PEOPLE OF CLARK COUNTY AND ALL NEVADANS OPPOSE THE LOCATION OF THE REPOSITORY AT YUCCA MOUNTAIN BY A MARGIN OF MORE THAN THREE TO ONE. WHEN ASKED WHETHER THE STATE SHOULD WITHDRAW ITS OPPOSITION TO THE PROJECT AND NEGOTIATE WITH DOE OR CONTINUE TO OPPOSE THE REPOSITORY, EVEN IF THAT MEANT THE REJECTION OF SIGNIFICANT ECONOMIC BENEFITS, OVER 73% RESPONDED THAT THE STATE SHOULD CONTINUE ITS OPPOSITION. AFTER CONDUCTING AN INDEPENDENT SURVEY FOR THE LAS VEGAS REVIEW JOURNAL, POLITICAL CONSULTANT BRUCE MERRILL OF ARIZONA STATE UNIVERSITY CONCLUDED

THAT THE OPPOSITION BE RECORDED TO THE PROJECT IN SOUTHERN NEVADA "IS ABOUT AS CLOSE TO A POLITICAL CONSENSUS ON A PUBLIC ISSUE THAT YOU CAN FIND".

IN A PAPER PRESENTED TO THE ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, DR. PAUL SLOVIC, AN INTERNATIONALLY RESPECTED EXPERT IN RISK AND DECISION PROCESSES, CONCLUDED THAT BECAUSE OF DOE's LACK OF TRUST AND CREDIBILITY AMONG PEOPLE IN THE COUNTRY, AND ESPECIALLY IN NEVADA, ALMOST NO CHANCE EXISTS FOR A REPOSITORY TO BE BUILT IN THE NEAR FUTURE. DR. SLOVIC RECOMMENDED, AND CLARK COUNTY AGREES, THAT STEPS MUST BE TAKEN TO REBUILD TRUST IN THE INSTITUTIONS RESPONSIBLE FOR IMPLEMENTING NUCLEAR WASTE PROGRAMS. A COMMITMENT BY D.O.E FOR LONG-TERM, ON-SITE STORAGE OF SPENT FUEL AT REACTOR SITES, COMBINED WITH A RE-EVALUATION OF DISPOSAL OPTIONS WITH AN EMPHASIS ON SCIENCE, NOT POLITICS, WILL GO A LONG WAY TOWARDS BEGINNING TO RESTORE PUBLIC TRUST AND CONFIDENCE IN DOE AND LAY THE GROUNDWORK FOR PRUDENT AND SAFE NUCLEAR WASTE STORAGE AND DISPOSAL EFFORTS IN THE FUTURE.

TO CONTINUE, HOWEVER, WITH THE DRACONEAN "HEAD IN THE SAND" APPROACH TO REPOSITORY SITING PURSUED STUBBORNLY BY DOE SINCE 1987 WILL NOT ONLY PROVE TO BE INTOLERABLY COSTLY, BUT WILL FURTHER DELAY AND ULTIMATELY DOOM DOE's EFFORTS. ON BEHALF OF MY CONSTITUENTS, THE CITIZENS OF CLARK COUNTY, I URGE THIS COMMITTEE AND CONGRESS TO ASSERT NOW ITS GOOD JUDGMENT AND INDEPENDENCE FROM DOE BY DISCONTINUING ANY FURTHER EFFORTS TO FORCE THE NUCLEAR WASTE REPOSITORY ON NEVADA IN THE FACE OF GROWING SCIENTIFIC INFORMATION ABOUT YUCCA MOUNTAIN'S UNSUITABILITY AND OVERWHELMING STATE AND LOCAL OPPOSITION.

IN PARTICULAR, THE CURRENT DOE LEGISLATIVE INITIATIVE TO STRIP A SOVEREIGN STATE OF ITS RIGHTFUL ENVIRONMENTAL REGULATORY AUTHORITY MARKS A LINE OVER WHICH NO CONGRESSIONAL REPRESENTATIVE OF ANY STATE SHOULD CROSS. SUCH A DANGEROUS PRECEDENT COULD BE USED AGAINST ANY STATE AT ANY TIME IN THE FUTURE. THE DEFEAT OF THIS COMPONENT OF THE PROPOSED NATIONAL ENERGY STRATEGY IS, THEREFORE, NOT JUST NECESSARY TO PROTECT THE CITIZENS OF THE STATE OF NEVADA. IT IS NECESSARY TO PROTECT THE FUTURE RIGHTS OF THE CITIZENS OF ALL COUNTIES AND STATES IN OUR NATION. YOUR CAREFUL AND FAIR CONSIDERATION OF THESE MATTERS IS URGENTLY NEEDED AND MOST RESPECTFULLY REQUESTED.

RESOLUTION

(of the Clark County Board of Commissioners)

WHEREAS, the Nuclear Waste Policy Act of 1982 delineates a procedure and time schedule for the establishment of the nation's first geologic repository for the storage of high level nuclear waste; and

WHEREAS, one of three sites under final consideration for siting of the repository is Yucca Mountain adjacent to the Nevada Test Site; and

WHEREAS, as a result of the location of Yucca Mountain and the limited transportation network in the southwest United States, major access to Yucca Mountain will be through the heavily populated Las Vegas Valley, which will be home to approximately one million people and a destination for 25 million visitors by the year 2000; and

WHEREAS, an accident within the highly developed Las Vegas Valley would create a direct physical and economic risk for residents and visitors alike; and

WHEREAS, Nevada already has contributed substantially to the United States nuclear program in the form of the nation's nuclear weapons testing center.

NOW, THEREFORE, BE IT RESOLVED by the Clark County Board of Commissioners that the Board opposes the location of a high-level nuclear waste repository in Southern Nevada.

PASSED, ADOPTED, AND APPROVED this 8th day of January, 1985.

CLARK COUNTY, NEVADA

By: Thalia M. Dondero
Thalia M. Dondero, Chairman
Board of County Commissioners

ATTEST:

Loretta Bowman
LORETTA BOWMAN, County Clerk

/sg

RESOLUTION

(OF THE CLARK COUNTY BOARD OF COMMISSIONERS)

WHEREAS, the Nuclear Waste Policy Act of 1982 delineated a procedure and time schedule for the establishment of the nation's first geologic repository for the storage of high level nuclear waste; and

WHEREAS, on January 8, 1985, the Clark County Board of Commissioners adopted a resolution opposing the location of a high-level nuclear waste repository in Southern Nevada; and

WHEREAS, Yucca Mountain in Nye County was selected in May of 1986 to be one of three sites to be considered for placement of the repository; and

WHEREAS, in December 1987, the Congress of the United States amended the Nuclear Waste Policy Act identifying Yucca Mountain as the preferred site for a high-level nuclear waste repository; and

WHEREAS, the amendments defined "affected units of local government", which could include Clark County; and

WHEREAS, the amendments established a procedure whereby such local governments could receive grants and impact mitigation assistance and could become directly involved in decision-making for the high level nuclear waste program; and

WHEREAS, designation as an affected unit of local government and acceptance of grant assistance in no way implies or requires acceptance of the placement of a high-level nuclear waste repository in Southern Nevada.

NOW, THEREFORE, BE IT RESOLVED by the Clark County Board of Commissioners that:

1. The Board continues to oppose the location of a high-level nuclear waste repository in Southern Nevada; and

-continued-

2. Pursuant to this opposition, and because Congress has directed the Department of Energy to apply its repository resources towards site characterization at Yucca Mountain, it is prudent and responsible for the Board to seek all supplemental financial assistance available to undertake the studies necessary to support impact assistance requests, to support a staff and program to monitor Department of Energy activities, and to provide a negotiating presence so that potential impacts on local residents and business interests can be mitigated.

AND BE IT FURTHER RESOLVED THAT the Board hereby declares Clark County to be an "affected unit of local government" pursuant to the Nuclear Waste Policy Act Amendments of 1987 and directs the County Manager to pursue such certification from the Department of Energy and to pursue all financial or other assistance available to Clark County under the high-level nuclear waste program.

PASSED, ADOPTED, AND APPROVED this 5th day of April, 1988.

CLARK COUNTY, Nevada

By: _____
PAUL J. CHRISTENSEN, Chairman
Board of County Commissioners

ATTEST:

_____
LORETTA BOWMAN, County Clerk

RESOLUTION
OF THE CLARK COUNTY BOARD OF COUNTY COMMISSIONERS
OPPOSING THE PROPOSED NEW NATIONAL ENERGY POLICY
THAT WOULD ELIMINATE STATE ENFORCEMENT
OF ENVIRONMENTAL LAWS WHICH CONTROL ACTIVITIES
OF THE DEPARTMENT OF ENERGY, INCLUDING STUDIES
OF YUCCA MOUNTAIN AS A HIGH-LEVEL NUCLEAR WASTE REPOSITORY

WHEREAS, Congress has enacted several laws to protect public health and environmental quality, including laws relating to clean air, clean water, safe drinking water, and solid waste management; and

WHEREAS, such federal laws provide for the delegation to states of certain permitting and enforcement authority, and

WHEREAS, the State of Nevada has accepted such delegated authority and is responsible for a broad scope of environmental regulation, including the consideration of environmental permits for the Department of Energy's site characterization of Yucca Mountain as a high-level nuclear waste repository; and

WHEREAS, the Department of Energy, through a proposed new National Energy Policy, now seeks to eliminate the State of Nevada's environmental oversight of Department of Energy activities, particularly those at Yucca Mountain, and

WHEREAS, it is well recognized throughout the nation that the Department of Energy needs more, not less, independent oversight of its activities.

NOW, THEREFORE, BE IT RESOLVED that the Clark County Board of Commissioners opposes the proposed new National Energy Policy that would

eliminate State enforcement of environmental laws which control activities of the Department of Energy, including studies of Yucca Mountain as a high-level nuclear waste repository.

PASSED, ADOPTED, AND APPROVED this 19th day of February 1991.

CLARK COUNTY, NEVADA

By _____
Chairman
Board of County Commissioners

Attest:

_____
Loretta Bowman, County Clerk

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RPT41

REMARKS OF

PETER J. CONROY

TO THE

COMMITTEE ON ENERGY & NATURAL RESOURCES

OF THE

UNITED STATES SENATE

MARCH 21, 1991

Mr. Chairman, I am pleased to be given this opportunity to present my views toward the Nuclear Waste Program. As I am sure we all agree, sources of energy which are non-polluting and assist the United States in achieving energy independence are essential to our national energy strategy. Nuclear power is one such energy source, and one of the issues that must be resolved to encourage the development of nuclear power is the disposition of the waste at the tail end of the fuel cycle. In this regard, I would like to encourage you to review the significance of the requirements of the nuclear waste repository and to permit the initiation of site characterization to answer the basic questions of site suitability.

By way of introduction, I am a Vice President of Harza Engineering Company of Chicago, Illinois. Harza is a subcontractor to the U.S. Department of Energy on the Technical and Management Support Services Contract for the Yucca Mountain Site Characterization Project in Las Vegas. Harza, through the years, has been the designer of many world class civil projects. Many of these projects have had construction costs of over $1 billion and most of these projects involved extensive underground excavations. Harza's responsibilities on these projects included: site characterization; performance and evaluation of field tests; establishment of design parameters; preparation of final designs and bid documents; surveillance during construction; and overview during start up and operation. The projects we have designed are successfully operating all over the world.

As an engineer, I see the need to question some of the basic requirements of the repository. An observation of the repository itself as being another conventional civil project is somewhat over simplified in view of the scientific concerns raised by many in meeting the objectives of isolating the waste for 10,000 years. I have the feeling that in establishing the 10,000 year criterion, we are saying

that technology has levelled off and will not advance in the next 10,000 years. If our ancestors 200 years ago tried to predict where we would be technologically today, they wouldn't in their fondest dreams predict what we take for routine. I am enough of an optimist to expect that these advances in technology will continue. In fact, I can see a scenario where the material we are calling waste today will be a resource in 200 years. It is the 10,000 year isolation requirement that causes most of the scientific debate since measurements made today must be extrapolated for a period of time longer than man's history of civilization. I would suggest that the requirements of the repository be reviewed from the standpoint of providing flexibility. The program has developed by establishing requirements without knowing the conditions of the site. This approach should be redirected to where the requirements are largely determined by conditions at the site. In other words, perform basic characterization before finalizing the requirements.

In the site characterization of a conventional civil project, the exploration is a step by step learning process. By the very nature of exploration for underground works, not all the variables can be anticipated. In this regard, I agree with the Position Statement of the Board on Radioactive Waste Disposal of the National Research Council. The very nature of variability in the geological environment requires a flexible approach to investigations. Some variables are directly related to engineering design and feasibility, and some are of scientific significance to assist in predicting the long term behavior of the geologic environment. The engineering variables are straight forward and their measurement and evaluation are necessary for any type of underground project, whether or not it is a repository for nuclear waste. Measuring and evaluating many of the scientific parameters, since they are to assist in predicting long term effects of the repository, take considerable time. If site characterization was conducted to resolve the basic issues first, while permitting long term tests to continue, many of the basic

questions of site suitability could be resolved in a fairly short time. It would seem fairer to the State of Nevada and the rate payers of the nuclear generating power companies to initiate the site characterization and expedite the decision on whether or not the site is suitable.

My suggestions to the Committee are:

- Authorize a review of the repository requirements. Provision should be made for some requirements to be reviewed or developed after a certain amount of site characterization is completed. Milestones for determining "fatal flaw" engineering questions can be established while permitting scientific investigations to be carried on concurrently in such a way as to not delay the engineering characterization. This would provide for a flexible and sequential process in site characterization.

- Provide legal access to the site to allow the Department of Energy to initiate characterization studies in a manner that will assist in answering the basic questions of site suitability in a timely manner.

Thank you for the opportunity to express my views.